UK MET OFFICE
GLOBAL DATA MONITORING REPORT

September 2004

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1. Introduction

As the WMO-appointed lead centre for monitoring surface marine data, the U.K. Meteorological Office produces monthly statistics on the quality of these observations received at RSMC Exeter. This report includes this information along with statistics for most other types of data. The figures and tables contained herein are presented according to the agreed standards for the exchange of monitoring results.

The report is based on data received at the UK Meteorological Office Headquarters, Exeter in time for inclusion into the appropriate analysis (the current cut-off time is approximately 7.2 hours after each analysis time). The evaluation of data quality is based on comparison with the appropriate 6-hour global model forecast (background) field, although to provide background values valid at the observation time for non-main hour data, time-interpolation of the T+3, T+6 and T+9 forecasts is used; and for sea surface temperature the background field is the analysis from the previous day. Generally, the background field is of high quality except in data sparse areas, tropical regions and areas close to steep orography where care should be taken in interpreting the statistics shown.

Comments or queries on the report are welcome and should be addressed to:-

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2 Global Data Monitoring Statistics

Ships, Fixed buoys, Platforms and Drifting buoys observations

TABLES 1and 2 contain lists of the stations which are considered to have returned suspect observations of pressure, windspeed, wind direction or sea surface temperature, as appropriate, during the month. The criteria for quality control are given on the header page for each table.

Figures 1 and 2 show 10 degree lat/long box average numbers of SHIP/SYNOP and DRIFTER observations received per day throughout the month at Exeter and assimilated into model runs. All data are included. Box average values are plotted as the nearest whole number (values of x.5 are rounded up). Where the average is more than 999, then 999 is plotted. A box with no observations is blank. If the 24 hour average >0 but <0.5, then 0 is plotted.

Synop Observations

Table 3 contains a list of stations which are considered to have returned suspect observations of Pressure during the month. The criteria for quality control are given in the header page. The reporting practice of each station is included in the list of statistics.

At the UK Met. Office, we monitor SYNOP pressure after it has been interpolated to our Global NWP Model's surface height. For most synoptic stations (about 75%), the surface pressure (at the model surface) is calculated from the reported station-level pressure, or, if this is not available, the height of a standard pressure-level (e.g. 850 hPa or 700 hPa). If neither of these are available, or if the reported station-level pressure is deemed unreliable, the reported mean sea-level pressure is used (about 25% of SYNOPs).

Aircraft observations

Tables 4A (300-150 hPa) and 4B (1000-301 hPa) contain lists of statistics calculated from data received from all airline carriers.

Figures 3A (300-150 hPa) and 3B (1000-301 hPa) show 10 degree lat/long box average numbers of aircraft reports in AIREP/AMDAR code (including AIREP, ACAR, AMDAR, ASDAR and ADS) received per day throughout the month at Exeter and assimilated into model runs. Observations with a vector wind difference (compared with the model background field) of >60 m s^{-1} have been excluded. Box average values are plotted as the nearest whole number (values of x.5 are rounded up). Where the average is more than 999, then 999 is plotted. A box with no observations is blank. If the 24 hour average >0 but <0.5, then 0 is plotted.

Figures 4A-7A (300-150 hPa) and 4B-7B (1000-301 hPa) show wind statistics for AIREP/ASDAR in AIREP/AMDAR code (including AIREP, ACAR, AMDAR, ASDAR and ADS). Observations with a vector wind difference > 60 m s^{-1} have been excluded. Statistics have not been calculated for 10 degree lat/long boxes containing <31 observations.

Figure	Parameter
4	Mean wind vectors
5	Mean observation - background wind vector
6	Mean observation-background speed (m s^{-1})
7	RMS observation-background vector (m s^{-1})

Radiosonde Observations

TABLES 5-7 contain lists of the stations which are considered to have returned suspect observations of geopotential height, vector wind or wind direction, as appropriate, during the month. The criteria for quality control are given on the header page for each table.

Figures 8 and 9 show 10 degree lat/long box average numbers of TEMP 500 hPa GEOPOTENTIAL HEIGHT and TEMP/PILOT 300 hPa WIND observations received per day throughout the month at Exeter and assimilated into model runs. Data from all hours are included. Box average values are plotted as the nearest whole number (values of x.5 are rounded up). Where the average is more than 999, then 999 is plotted. A box with no observations is blank. If the 24 hour average >0 but <0.5, then 0 is plotted.

APPENDIX I shows details of the gross error limits used in TABLES 5 and 6 and the weights used in the RMS values in TABLE 5.

Satellite Observations

Figures 10-24 show satellite wind statistics for all geostationary satellites. All plots other than **AVAILABILITY** show average data where there are > 10 observations in a 10 degree lat/long box.

Figure	Parameter Plotted	Layer (hPa)
10	Availability/average daily number	701-1000
11	Vector mean wind (observed)	701-1000
12	Observation-background vector wind difference	701-1000
13	Mean observation-background speed differences	701-1000
14	RMS observation-background vector difference	701-1000
15	Availability/average daily number	401-700
16	Vector mean wind (observed)	401-700
17	Observation-background vector wind difference	401-700
18	Mean observation-background speed differences	401-700
19	RMS observation-background vector difference	401-700
20	Availability/average daily number	101-400
21	Vector mean wind (observed)	101-400
22	Observation-background vector wind difference	101-400
23	Mean observation-background speed differences	101-400
24	RMS observation-background vector difference	101-400

Figures 25-39 show sounding statistics from the polar orbitting satellite NOAA-15. Figure 25 shows the mean daily number of ATOVS soundings, and figures 26-39 show mean and standard deviation observation-background differences for brightness temperature, for selected channels.

Figure		Weighting function peak (hPa)
26	Mean	Surface (HIRS8)
27	SD	Surface (HIRS8)
28	Mean	700 (HIRS15)
29	SD	700 (HIRS15)
30	Mean	500-700 (HIRS11)
31	SD	500-700 (HIRS11)
32	Mean	400 (HIRS4)
33	SD	400 (HIRS4)
34	Mean	700 (AMSUA5)
35	SD	700 (AMSUA5)
36	Mean	300 (AMSUA7)
37	SD	300 (AMSUA7)
38	Mean	100 (AMSUA9)
39	RMS	100 (AMSUA9)

Figures 40-54 show sounding statistics from the polar orbitting satellite NOAA-16. Figure 40 shows the mean daily number of ATOVS soundings, and figures 41-54 show mean and standard deviation observation-background differences for brightness temperature, for selected channels.

Figure		Weighting function peak (hPa)
41	Mean	Surface (HIRS8)
42	SD	Surface (HIRS8)
43	Mean	700 (HIRS15)
44	SD	700 (HIRS15)
45	Mean	500-700 (HIRS11)
46	SD	500-700 (HIRS11)
47	Mean	400 (HIRS4)
48	SD	400 (HIRS4)
49	Mean	700 (AMSUA5)
50	SD	700 (AMSUA5)
51	Mean	300 (AMSUA7)
52	SD	300 (AMSUA7)
53	Mean	100 (AMSUA9)
54	RMS	100 (AMSUA9)

Figures 55-69 show sounding statistics from the polar orbitting satellite NOAA-17. Figure 55 shows the mean daily number of ATOVS soundings, and figures 56-69 show mean and standard deviation observation-background differences for brightness temperature for selected channels.

Figure		Weighting function peak (hPa)
56	Mean	Surface (HIRS8)
57	SD	Surface (HIRS8)
58	Mean	700 (HIRS15)
59	SD	700 (HIRS15)
60	Mean	500-700 (HIRS11)
61	SD	500-700 (HIRS11)
62	Mean	400 (HIRS4)
63	SD	400 (HIRS4)
64	Mean	700 (AMSUA5)
65	SD	700 (AMSUA5)
66	Mean	300 (AMSUA7)
67	SD	300 (AMSUA7)
68	Mean	100 (AMSUA9)
69	RMS	100 (AMSUA9)

N.B. All satellite sounding data is bias-corrected (and thinned) before being assimilated in the UKMO NWP model.

3 Composite Observing Systems for the North Atlantic (COSNA)

This section shows statistics for upper air (radiosonde and aircraft) and surface (drifter) data for the North Atlantic area for data received at Exeter during the month.

TABLE 8 shows quality statistics for **Mean Sea-level Pressure, Windspeed and Wind Direction** received at Exeter in DRIFTER code during the month for the area 10°N - 80°N, 85°W - 0°W.

TABLE 9 shows quality statistics for **Temperature and Vector Wind** received at Exeter from aircraft during the month for the area 40°N - 70°N, 60°W - 0°W.

Table 10 - 13 show quality statistics (**Geopotential Height and Windspeed at 100 and 500 hPa**) for all TEMPSHIPS in the area bounded by 0°N - 90°N, 100°W - 40°E and selected TEMP stations within the same area.

Revisions

1. May 95 Monitoring statistics for NOAA-11 removed. Figures 25-27 now show data for NOAA-12
2. May 95 Notes giving details of observations included in wind direction statistics clarified and corrected.
3. August 95 Monitoring statistics for NOAA-14 added with figures 28-30.
4. February 96 Monitoring statistics for GOES-7 have been replaced by statistics for GOES-8 and GOES-9.
5. April 96. 500 km and 120 km SATEMs replaced by 120 km resolution temperature profiles produced locally from the radiances disseminated by NESDIS.
6. February 97 Monitoring statistics for Meteosat 5 have been replaced by statistics for Meteosat 6.
7. Sept 97 Monitoring statistics for NOAA-12 removed. Figures 25-27 now show data for NOAA-11
8. January 1998. Increase in resolution of UKMO global forecast model.
9. April 1998. GOES winds ceased on 2nd March 1998, and were replaced with GOES high resolution winds from 15th.
10. June 1998. Monitoring statistics for Meteosat-6 were replaced by monitoring statistics for Meteosat-7, from 3rd June.
11. June 1998. Corrections in our processing of radiosonde data resulted in a decrease in the number of 500hPa geopotential heights in Figure 8 of about 230 per 24 hours (compared with previous reports), and a small increase in the number of 300hPa winds in Figure 9.
12. July 1998. Meteosat-5 began transmitting winds from 2nd July, at 63 degrees East (over the Indian ocean), and this data is included in the statistics.
13. July 1998. GOES-9 (at 135W) was replaced mid-month by GOES-10 (initially at 105W, moving towards 135W).
14. February 1999. Problems with NOAA-11, and TOVS data ceased to be assimilated from 26 February.
15. March 1999. UKMO introduced 3-D VAR assimilation system on 29 March, and also began assimilating ATOVS data from NOAA-15.
16. May 1999. Included statistics for ATOVS sounding data from NOAA-15.
17. September 1999. Included statistics for high resolution visible winds from Meteosat-5 and Meteosat-7.
18. October 1999. The 3-D VAR assimilation system was upgraded on 19 October, including improvements in the assimilation of ATOVS radiances, use of SSM/I surface wind speed, an improvement in the calculation of surface pressure for SYNOPs, and thinning and revision of observation errors of aircraft data.
19. November 1999. High resolution visible winds from Meteosat-5 and Meteosat-7 removed until used operationally.
20. April 2000. Aireps in Table 4 and Figures 3-7 split into ranges 300-150 hPa (A) and 1000-301 hPa (B).
21. September 2000. Corrected an error affecting the mean positions of a minority of buoys in Table 2.
22. November 2000. An error in the production of Table 6 was corrected. Previously, some sondes with suspect vector winds were being missed.
23. April 2001. Included statistics for ATOVS sounding data from NOAA-16.
24. May 2001. Included statistics for sea surface temperatures from marine surface observations.
25. December 2002. Included statistics for ATOVS sounding data from NOAA-17.
26. December 2002. Meteosat-7 and Meteosat-5 SATOB winds replaced by higher resolution BUFR-coded winds.
27. November 2003. Included temperature and relative humidity statistics for ships, fixed buoys and platforms in Table 1.
28. November 2003. NOAA 17 statistics no longer available due to malfunction of the AMSU-A instrument.

TABLE 1

MONITORING OF MARINE SURFACE OBSERVATIONS
MONTHLY SUSPECT LIST - SHIPS, FIXED BUOYS AND PLATFORMS
MONITORING CENTRE: EXETER
MONTH: Sep 2004

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from each unique identifier for ships, fixed buoys and platforms.

Standard of comparison :Background field from UKMO global model.

Observation times :All hours

Elements monitored
:Mean sea level pressure (hPa).
:Wind speed (m s^{-1}).
:Wind direction (Degrees).
:Air temperature (Degrees C).
:Relative Humidity (%).
:Sea surface temperature (Degrees).

Parameters monitored

:NOBS :Number of observations received excluding duplicates.

:PGE :Percentage of observations with gross errors.

:%REJ :Percentage of observations flagged excluding those with gross errors.

:SD :SD of difference of observations from background values excluding those with gross errors.

:BIAS :Mean difference of observations from background values excluding those with gross errors.
N.B. a positive bias indicates the wind observation is veered to the background.

:RMS :Root Mean Square difference of observations from background values excluding those with gross errors.

GROSS ERROR LIMIT
:15 hPa (pressure)
:25 m s^{-1} (vector wind)
:15 degrees (air temperature)
:10 degrees (sea surface temperature)

SELECTION CRITERIA :NOBS ≥ 20 , and one or more of the following:

1.|bias|	≥ 4 hPa	(pressure),
	≥ 5 m s^{-1}	(wind speed),
	≥ 30 degrees	(direction).
	≥ 3 degrees	(sea surface temperature).
	≥ 4 degrees	(air temperature)
	≥ 15%	(relative humidity)
2.SD	≥ 6 hPa	(pressure),
	≥ 80 degrees	(direction).
	≥ 5 degrees	(sea surface temperature).
	≥ 6 degrees	(air temperature)
	≥ 25%	(relative humidity)
3.PGE	≥ 25	

N.B. Observations of wind direction are only included in the wind direction statistics if the observed OR background wind speed > 5 m s^{-1}

```
IDENTIFIER    ELEM      NOBS    PGE   %REJ       SD      BIAS       RMS

AUCT           P          26      0     50      1.0       4.3       4.4
AVOSTEST       P         138     96    100      0.3     -14.4      14.4
A8FA5          P          40      0     80      1.0       5.7       5.8
CGDS           P         207      0     95      3.2      -4.9       5.9
CG2992         P         391      0    100      3.7      -5.4       6.5

C6FV3          P          34      0      0      0.7       8.9       8.9
ELWD5          P          49      0      2      1.1       4.3       4.4
H8XD           P          20     25     25      0.6      -0.3       0.7
KMJL           P          28      4      4      1.2      -4.1       4.3
KS005          P          61      0      0      0.7      -4.4       4.5

OXFU2          P          29      0     10      2.6       4.2       4.9
P3NK5          P          24      0     21      2.9      -4.2       5.1
TEST           P          40     95    100      0.2       0.0       0.2
UAJS           P          25      0     84      1.0      -4.2       4.3
UCKH           P          54      0     22      1.0      -4.1       4.2

UCUP           P          77     26     44      3.7       2.5       4.4
VCTV           P          31      0    100      3.6      -4.6       5.8
VOTV           P          20      0    100      3.2      -8.6       9.2
VQGQ4          P          47      0     21      1.7       6.2       6.4
VRZL3          P          27      0     67      1.5       4.9       5.1

V2GR           P          41      0      0      0.8       4.0       4.1
WADZ           P          32      0     34      3.0       4.0       5.0
WCY7054        P          41      0     51      1.0       6.6       6.6
ZCBH8          P          56      0     46      1.7      -4.6       4.9
ZDFK7          P          49      0     27      1.2       4.1       4.3

3FJA9          P          31      0     19      2.6       4.3       5.0
3FPA6          P          47      0     17      0.9      -4.0       4.1
62166          P          52      0    100      4.5       5.1       6.7
8PNM           P          24      0     29      1.5       4.1       4.4
IDENTIFIER    ELEM      NOBS    PGE   %REJ       SD      BIAS       RMS

DGZO        SPEED         34      0    100      3.6       6.1       7.1
MCCN6       SPEED         33      0     24      5.2       5.4       7.5
PBVO        SPEED         21      5    100      2.4      -6.8       7.2
SCKM        SPEED         21      0     24      3.1       6.5       7.2
VJIK        SPEED         55     18    100      2.6      12.3      12.5

44138       SPEED        680      0    100      2.7      -8.2       8.7
9MBR8       SPEED         32      0     22      4.1       6.4       7.5
IDENTIFIER    ELEM      NOBS    PGE   %REJ       SD      BIAS       RMS

AVOSTEST    DIRN.         33      0      0     15.3     *****     141.8
CGDT        DIRN.         28      0      0     66.3      54.7      85.9
VJIK        DIRN.         32     31      0     17.5     *****     123.1
23101       DIRN.         89      0      0     16.7      47.6      50.4
IDENTIFIER    ELEM      NOBS    PGE   %REJ       SD      BIAS       RMS

TEST           T          41     95    100      0.1      -1.4       1.4
UDKC           T          35      0    100      3.1      -4.3       5.2
VCPG           T          22      0    100      2.3       4.8       5.4
WCW9126        T          51     18    100      2.1      11.1      11.2
WWU8           T          25      8    100      2.8       9.7      10.1

45141          T         330      0    100      2.5       7.2       7.7
45150          T         586      1    100      2.3       5.9       6.4
46081          T         144      9    100      3.1       6.5       7.2
46181          T         671      0    100      1.7       4.0       4.4
IDENTIFIER    ELEM      NOBS    PGE   %REJ       SD      BIAS       RMS

DACF           RH        119      0    100     34.9     -25.0      42.9
DBKV           RH        267      0    100     19.8     -23.7      30.9
DFPC           RH        171      0    100     11.7      24.6      27.2
FNAT           RH         45      0    100      9.2      18.5      20.6
OUEW           RH         71      0    100     18.1     -21.1      27.8
```

VNZJ	RH	44	0	100	8.1	16.0	17.9
XXAF	RH	23	0	100	21.4	-33.1	39.4
ZCBH8	RH	55	0	100	8.1	17.7	19.5
3ERP5	RH	29	0	100	28.9	-12.9	31.7
46054	RH	227	0	100	13.7	15.5	20.7
9MBR8	RH	40	0	100	6.0	15.7	16.8

IDENTIFIER	ELEM	NOBS	PGE	%REJ	SD	BIAS	RMS
A8BZ6	SST	41	0	100	1.4	-3.7	3.9
A8CC4	SST	59	0	27	1.3	-3.1	3.4
A8CG3	SST	40	0	100	1.7	-3.4	3.8
A8FI5	SST	28	0	43	1.3	-3.9	4.2
DAJL	SST	46	2	9	1.0	3.0	3.1
ELZH9	SST	26	0	100	1.7	5.6	5.8
FHQB	SST	31	100	100			
KHRC	SST	22	0	59	0.5	-3.5	3.6
KRNJ	SST	20	0	100	1.2	-3.7	3.9
KRPD	SST	51	0	69	1.5	-3.5	3.8
LAIP5	SST	43	0	56	1.9	-3.2	3.7
TEST	SST	31	94	100	0.1	-0.7	0.7
UAJS	SST	24	0	83	0.5	-4.2	4.2
UCBM	SST	24	0	100	1.9	-3.8	4.3
UHLA	SST	22	0	86	2.7	-5.0	5.6
VRVT2	SST	75	0	100	0.7	3.4	3.4
VVKV	SST	25	0	100	1.1	5.6	5.7
WDA6552	SST	60	5	105	1.4	-7.0	7.1
ZCBH8	SST	56	0	30	2.5	-3.1	3.9
ZCBV7	SST	26	0	27	0.8	3.5	3.6
3EMQ9	SST	36	0	53	1.0	-3.9	4.0
3ERP5	SST	45	36	42	2.2	-0.7	2.3
3FJV4	SST	22	0	77	0.6	4.6	4.7
3FKM8	SST	23	0	100	1.2	-3.3	3.5
3FPA6	SST	49	0	100	0.9	5.7	5.8
44011	SST	624	0	100	1.2	-3.3	3.5
44038	SST	479	0	59	0.9	-3.1	3.2
45141	SST	298	100	100			
45144	SST	621	0	100	0.8	6.7	6.8
46071	SST	176	0	82	0.5	-3.3	3.3
46212	SST	99	0	55	0.6	-3.0	3.1
46214	SST	102	0	51	0.3	-3.0	3.1
9VAP5	SST	36	3	28	1.9	3.0	3.5

Figure 1. SHIP/SYNOP mean daily count. SEPTEMBER 2004
All hours
Global average number of observations in 24 hours = 20071

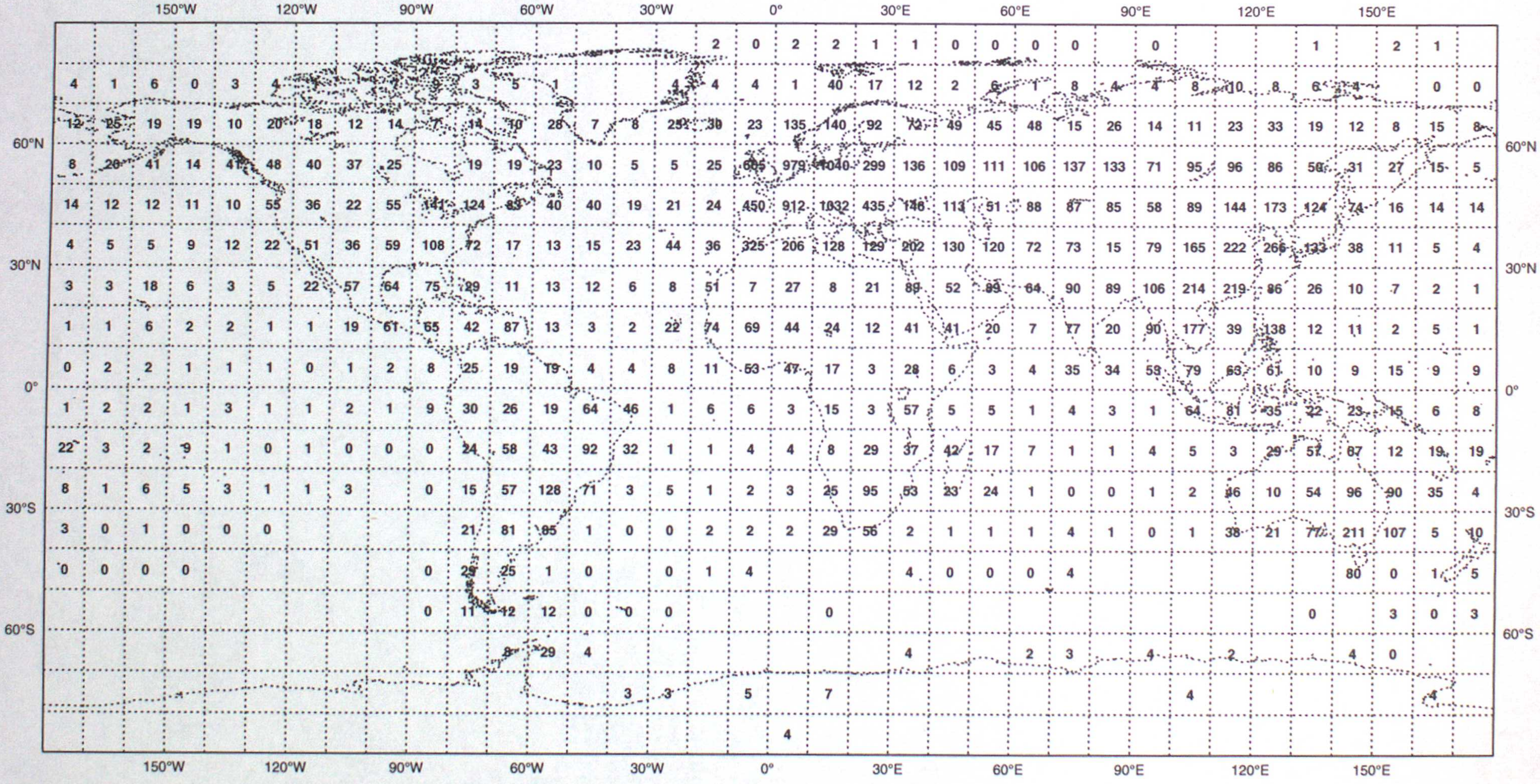

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S

TABLE 2

MONITORING OF MARINE SURFACE OBSERVATIONS
MONTHLY SUSPECT LIST - DRIFTING BUOYS
MONITORING CENTRE: EXETER
MONTH: Sep 2004

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from each unique identifier for drifting buoys.
Standard of comparison		:Background field from UKMO global model.
Position		:Average latitude and longitude for period.
Observation times		: All hours
Elements monitored		:Mean sea level pressure (hPa). :Wind speed (m s^{-1}). :Wind direction (degrees). :Sea surface temperature (degrees).
Parameters monitored		
	:NOBS	:Number of observations received excluding duplicates.
	:PGE	:Percentage of observations with gross errors.
	:%REJ	: Percentage of observations flagged excluding those with gross errors
	:SD	:SD of difference of observations from background values excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values excluding those with gross errors. **N.B. a positive bias indicates the wind observation is veered to the background.**
	:RMS	:Root Mean Square difference of observations from background values excluding those with gross errors.
GROSS ERROR LIMIT	:15 hPa	(pressure)
	:25 m s^{-1}	(vector wind)
	:10 degrees	(sea surface temperature)

SELECTION CRITERIA :	NOBS	≥ 20 , and one or more of the following:	
	1.|bias|	≥ 4 hPa	(pressure),
		≥ 5 m s^{-1}	(wind speed),
		≥ 30 degrees	(direction).
		≥ 3 degrees	(sea surface temperature).
	2.SD	≥ 6 hPa	(pressure),
		≥ 80 degrees	(direction).
		≥ 5 degrees	(sea surface temperature).
	3.PGE	≥ 25.	

N.B. Observations of wind direction are only included in the wind direction statistics if the observed OR background wind speed > 5 m s^{-1}

IDENTIFIER	LAT.	LONG.	ELEM	NOBS	PGE	%REJ	SD	BIAS	RMS
16565	-31.4	100.6	P	588	15	59	6.2	-3.2	7.0
17661	-52.9	95.5	P	676	13	51	7.1	0.0	7.1
17664	-57.8	58.8	P	144	35	100	7.3	-1.2	7.4
25572	88.7	-104.7	P	226	28	100	3.3	1.7	3.7
33663	-46.4	37.6	P	329	3	69	7.1	0.8	7.2
41919	23.2	-70.8	P	226	93	99	5.0	8.4	9.8
52684	8.3	127.6	P	536	46	100	5.1	-0.7	5.2
55583	-20.8	167.3	P	58	0	66	6.4	-3.2	7.1
61552	41.6	28.1	P	286	0	100	0.5	-5.4	5.4
61554	41.6	32.3	P	218	43	88	8.6	-1.3	8.7

IDENTIFIER	LAT.	LONG.	ELEM	NOBS	PGE	%REJ	SD	BIAS	RMS
41919	23.2	-70.8	SPEED	181	2	100	4.5	11.7	12.5
46779	55.8	-155.6	SPEED	30	0	100	1.0	-11.6	11.6
47590	13.9	142.1	SPEED	234	8	100	5.6	10.9	12.2

IDENTIFIER	LAT.	LONG.	ELEM	NOBS	PGE	%REJ	SD	BIAS	RMS
41921	23.5	-71.0	DIRN.	173	2	0	23.9	30.9	39.0
47590	13.9	142.1	DIRN.	99	19	0	20.6	30.1	36.5
48613	75.2	-19.2	DIRN.	24	21	0	156.2	-43.6	162.2
52523	35.5	158.3	DIRN.	122	0	0	136.2	-50.5	145.2
52651	22.1	143.6	DIRN.	98	0	0	17.2	47.4	50.4
52689	12.5	154.9	DIRN.	44	2	0	44.4	37.1	57.8
52693	10.0	142.7	DIRN.	66	5	0	20.8	-47.7	52.0
52694	12.7	143.3	DIRN.	51	90	0	17.3	85.7	87.4

IDENTIFIER	LAT.	LONG.	ELEM	NOBS	PGE	%REJ	SD	BIAS	RMS
33514	-37.4	-52.9	SST	238	0	61	1.6	3.5	3.9
41617	23.8	-71.4	SST	25	100	100			
41618	23.1	-66.7	SST	60	57	57	0.0	-2.5	2.5
41619	23.6	-70.4	SST	37	59	59	0.1	-2.3	2.3
41620	23.9	-70.4	SST	36	39	39	0.0	-2.3	2.3
41622	22.9	-70.9	SST	34	68	68	0.0	-2.4	2.4
41623	27.1	-75.1	SST	35	100	100			
41668	25.2	-67.9	SST	59	100	100			
41669	22.8	-71.6	SST	35	51	54	0.1	-2.4	2.4
41671	24.9	-71.9	SST	38	32	34	0.5	-2.2	2.3
41852	23.2	-71.7	SST	23	100	100			
41853	21.9	-69.3	SST	34	94	100	0.0	-2.7	2.7
41854	22.9	-66.5	SST	38	55	55	0.0	-2.6	2.6
41930	23.2	-67.4	SST	148	78	100	1.0	-9.6	9.6
43545	28.8	-111.9	SST	45	2	100	2.3	3.2	3.9
43555	25.6	-109.1	SST	27	0	96	0.7	-3.9	3.9
43574	31.1	-113.7	SST	40	0	100	0.3	3.8	3.8
44834	33.2	-33.8	SST	178	42	72	4.6	5.4	7.1
46560	53.3	-169.2	SST	75	0	80	1.2	-4.0	4.2
46972	17.5	162.5	SST	193	0	100	0.6	5.4	5.5
51511	-6.7	-167.9	SST	156	23	73	2.7	-4.0	4.8
51518	-0.3	-157.3	SST	35	100	100			

Figure 2. DRIFTER mean daily count. SEPTEMBER 2004
All hours
Global average number of observations in 24 hours = 11720

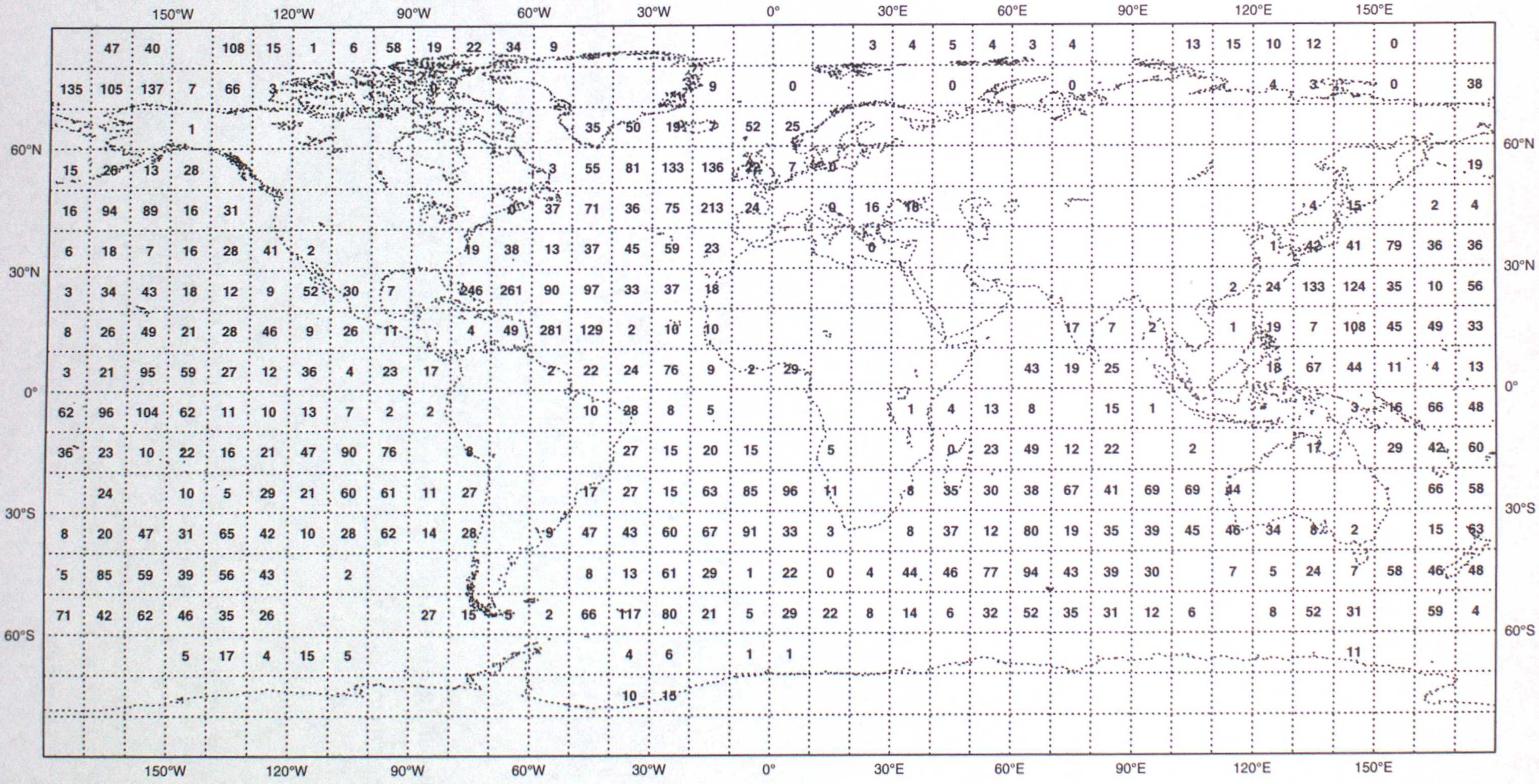

150°W 120°W 90°W 60°W 30°W 0° 30°E 60°E 90°E 120°E 150°E
60°N 30°N 0° 30°S 60°S
47 40 108 15 1 6 58 19 22 34 9 3 4 5 4 3 4 13 15 10 12 0
135 105 137 7 66 3 9 0 0 0 4 3 0 38
1 35 50 19 7 52 25
15 26 13 28 3 55 81 133 136 22 7 0 19
16 94 89 16 31 0 37 71 36 75 213 24 0 16 18 4 15 2 4
6 18 7 16 28 41 2 19 38 13 37 45 59 23 0 1 42 41 79 36 36
3 34 43 18 12 9 52 30 7 246 261 90 97 33 37 18 2 24 133 124 35 10 56
8 26 49 21 28 46 9 26 11 4 49 281 129 2 10 10 17 7 2 1 19 7 108 45 49 33
3 21 95 59 27 12 36 4 23 17 2 22 24 76 9 2 29 43 19 25 18 67 44 11 4 13
62 96 104 62 11 10 13 7 2 2 10 28 8 5 1 4 13 8 15 1 3 16 66 48
36 23 10 22 16 21 47 90 76 8 27 15 20 15 5 0 23 49 12 22 2 17 29 42 60
24 10 5 29 21 60 61 11 27 17 27 15 63 85 96 11 8 35 30 38 67 41 69 69 44 66 58
8 20 47 31 65 42 10 28 62 14 28 9 47 43 60 67 91 33 3 8 37 12 80 19 35 39 45 46 34 8 2 15 63
5 85 59 39 56 43 2 8 13 61 29 1 22 0 4 44 46 77 94 43 39 30 7 5 24 7 58 46 48
71 42 62 46 35 26 27 15 5 2 66 117 80 21 5 29 22 8 14 6 32 52 35 31 12 6 8 52 31 59 4
5 17 4 15 5 4 6 1 1 11
10 16
150°W 120°W 90°W 60°W 30°W 0° 30°E 60°E 90°E 120°E 150°E
60°N 30°N 0° 30°S 60°S

TABLE 3

MONITORING OF LAND SURFACE OBSERVATIONS
MONTHLY SUSPECT LIST - SYNOPS & AUTOSYNOPS
MONITORING CENTRE: EXETER
MONTH: Sep 2004

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from each unique identifier for synops & autosynops.
Standard of comparison		:Background field from UKMO global model.
Observation times		:00, 06, 12, 18 UTC
Elements monitored		:Surface pressure (hPa).
Parameters monitored	:HT(m)	:Station height (in metres) as given in WMO No. 9 Vol A
	:RP	:Pressure reporting practice M=mean sea level pressure (hPa) reported. S=Station level pressure reported. 8=Geopotential height (m) of 850 hPa surface reported. 7=Geopotential height (m) of 700 hPa surface reported.
	:NOBS	:Number of observations received excluding duplicates.
	:NGE	:Number of observations with gross errors.
	:PGE	:Percentage of observations with gross errors.
	:%REJ	:Percentage of observations flagged excluding those with gross errors.
	:SD	:SD of difference of observations from background values excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values excluding those with gross errors.
	:RMS	:Root Mean Square difference of observations from background values excluding those with gross errors.

GROSS ERROR LIMIT	:15 hPa	(pressure)
SELECTION CRITERIA	:NOBS	≥ 20 ,and one or more of the following:
	1.|bias|	≥ 4 hPa
	2. SD	≥ 6 hPa
	3.PGE	≥ 25.

N.B. For stn ht ≥ 500m, mslp is that calculated from station level pressure where available.
For stn ht < 500m, mslp is that as reported by the station where available.

SUSPECT SYNOPS (PRESSURE) BY WMO REGION SEP 200

WMO REGION 1:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
60320	35.9N	5.4W	2	MS	61	0	0	0	0.9	-10.2	10.2
61492	16.1N	13.5W	18	MS	52	0	0	2	1.1	5.4	5.5
62056	32.8N	21.8E	625	S8	72	2	3	1	1.1	-5.1	5.2
63801	4.9S	29.6E	882	S8	78	1	1	0	0.7	7.9	7.9
63881	8.0S	31.6E	1923	S	45	5	11	2	0.8	13.6	13.6
65355	9.8N	1.1E	342	MS	99	6	6	0	0.9	-13.3	13.3
66285	11.8S	19.9E	1357	8	20	8	40	0	0.4	14.2	14.2
67229	14.7S	34.3E	1270	S	37	22	59	0	1.4	13.0	13.1
68014	19.6S	18.1E	1411	S8	73	0	0	0	0.6	-6.9	6.9
68030	18.5S	25.6E	1071	S8	81	2	2	0	4.2	9.0	9.9
68038	20.5S	26.0E	903	8	82	0	0	2	1.2	4.0	4.2
68312	26.5S	18.1E	1067	S8	76	0	0	21	0.7	4.1	4.2
68396	26.5S	31.3E	641	S8	49	0	0	2	1.3	4.7	4.9
68575	30.0S	30.0E	1175	S8	113	113	100	0			

WMO REGION 2:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
30554	54.5N	113.6E	995	MS	114	1	1	1	1.0	11.6	11.6
36982	41.9N	78.2E	3635	S7	112	0	0	0	1.3	5.4	5.6
38565	40.6N	65.7E	485	MS	114	114	100	0			
38846	38.4N	70.0E	1437	S8	62	2	3	8	2.3	-6.1	6.5
40435	24.5N	44.4E	991	MS	54	2	4	0	0.6	7.7	7.7
40700	39.6N	47.9E	45	MS	108	0	0	0	0.8	-5.1	5.2
40713	37.4N	46.3E	1475	MS	111	21	19	0	0.8	13.0	13.0
40726	36.8N	45.7E	1384	MS	109	0	0	0	0.9	4.3	4.4
40741	36.5N	61.2E	235	MS	108	0	0	0	0.6	-4.7	4.7
40743	36.2N	57.7E	978	MS	110	0	0	0	1.0	5.0	5.1
40780	33.6N	46.4E	1362	MS	109	0	0	0	0.8	5.5	5.6
41254	23.1N	57.6E	1755	S8	113	113	100	0			
44416	28.6N	81.6E	720	MS	72	1	1	1	0.9	5.0	5.1
47022	40.8N	128.2E	1224	S	85	0	0	0	0.9	4.5	4.6
47678	33.1N	139.8E	79	MS	114	0	0	0	0.6	-8.6	8.6
48924	21.1N	101.5E	644	S	53	1	2	0	0.9	11.1	11.1
48925	20.7N	102.0E	550	S	48	1	2	6	1.1	-10.1	10.2
48938	19.2N	101.7E	326	MS	54	45	83	0	0.9	14.2	14.2
50727	47.2N	119.9E	1028	MS	114	0	0	0	0.6	4.5	4.5
50978	45.3N	130.9E	234	MS	114	0	0	0	0.6	-5.2	5.2
53646	38.3N	109.8E	1058	MS	114	0	0	0	0.6	-11.5	11.5
56462	29.0N	101.5E	2994	S	114	0	0	0	0.9	8.6	8.6
56768	25.0N	101.5E	1773	S	114	1	1	1	0.5	-5.3	5.3
57816	26.6N	106.7E	1074	MS	114	67	59	0	0.3	-14.5	14.5
59663	21.8N	112.0E	22	MS	113	0	0	0	0.6	-7.2	7.2

WMO REGION 3:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
80434	9.2N	66.0W	125	MS	30	0	0	3	1.7	-5.1	5.4
82181	2.0S	54.1W	146	MS	70	0	0	0	1.0	5.7	5.8
82586	5.2S	39.3W	212	MS	85	1	1	0	0.9	-4.1	4.2
82704	7.6S	72.7W	170	MS	62	0	0	0	1.2	-4.0	4.2
82765	7.3S	47.5W	193	MS	78	0	0	1	1.2	4.1	4.3
83235	12.4S	46.4W	604	MS	84	0	0	0	0.7	6.5	6.5
83332	14.1S	46.4W	826	MS	84	16	19	0	0.7	14.0	14.0
83470	17.9S	50.9W	727	MS	83	0	0	1	0.8	-5.4	5.5
83531	18.6S	46.5W	940	MS	87	0	0	1	0.8	-6.4	6.4
83836	25.5S	50.6W	837	MS	88	0	0	0	1.0	-4.7	4.8
84377	3.8S	73.3W	125	MS	96	0	0	0	1.0	4.1	4.2

84401	5.2S	80.6W	49	MS	91	0	0	0	0.6	4.4	4.4
84425	5.9S	76.1W	179	MS	20	0	0	0	1.1	4.9	5.0
84455	6.5S	76.4W	281	MS	71	0	0	1	1.6	7.9	8.1
84472	7.1S	78.5W	2620	S	41	0	0	0	0.8	-5.4	5.5
84474	7.2S	76.7W	350	S	20	0	0	0	1.2	9.5	9.6
84501	8.1S	79.0W	26	MS	67	0	0	0	0.6	4.5	4.5
84686	13.6S	72.0W	3248	S	96	0	0	0	0.8	-4.3	4.4
84688	13.7S	73.4W	3444	S	35	0	0	0	0.7	-12.3	12.3
84720	14.9S	75.0W	567	MS	43	0	0	0	0.6	4.3	4.3
84782	18.1S	70.3W	468	MS	74	0	0	0	1.2	6.1	6.2
85140	14.3S	67.4W	140	MS	54	0	0	0	1.0	7.1	7.2
85210	16.3S	58.4W	124	MS	52	0	0	0	1.0	4.3	4.4
85264	18.5S	64.1W	1998	S	53	1	2	26	1.4	-8.9	9.0
85312	19.8S	63.9W	992	S	40	1	3	0	1.8	-11.1	11.2
85406	18.3S	70.3W	55	M	113	0	0	0	0.8	4.6	4.7
85432	22.5S	68.9W	2320	S8	79	0	0	0	0.5	4.3	4.3

WMO REGION 4:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
71048	61.6N	125.8W	610	MS	113	0	0	0	1.0	4.1	4.2
71060	52.5N	116.1W	230	MS	113	113	100	0			
71181	47.1N	55.3W	29	MS	114	0	0	0	0.7	-5.8	5.8
72327	36.1N	86.7W	182	MS	113	0	0	0	0.6	4.3	4.3
76055	31.0N	114.9W	440	MS	72	72	100	0			
76225	28.6N	106.1W	1435	MS	80	0	0	0	0.8	-4.4	4.5
76543	22.0N	98.8W	104	MS	81	0	0	0	0.6	9.0	9.0
76658	19.2N	103.7W	494	MS	46	0	0	0	0.6	5.6	5.6
76687	19.5N	96.9W	1389	MS	95	0	0	0	0.5	4.3	4.3
76762	17.5N	99.5W	1265	MS	94	0	0	0	0.8	5.6	5.7
76773	17.8N	97.8W	1650	MS	25	0	0	0	0.8	6.1	6.2
76843	16.8N	93.1W	528	MS	107	0	0	1	1.0	-5.2	5.3
78588	17.2N	87.5W	-286	M	108	108	100	0			
78655	14.0N	89.6W	725	M	29	1	3	3	0.7	11.3	11.3

WMO REGION 5:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
94130	14.8S	131.9E	120	MS	113	0	0	0	1.0	5.2	5.3
94146	23.1S	135.6E	18	MS	56	0	0	0	4.0	-4.7	6.2
96505	3.7N	115.7E	-9999	8	26	25	96	0	0.0	1.2	1.2
97378	10.7S	123.1E	1	MS	48	46	96	0	7.1	-7.6	10.4
98851	6.1N	125.2E	14	MS	107	11	10	67	6.3	-8.9	10.9

WMO REGION 6:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
01360	61.9N	7.9E	711	MS	78	0	0	0	0.8	5.8	5.9
06239	54.9N	44.7E	49	MS	341	77	23	0	6.0	-1.5	6.2
06605	47.1N	7.1E	1599	S8	113	0	0	5	1.0	-4.1	4.2
06685	47.0N	9.1E	515	MS	113	0	0	2	0.9	6.5	6.6
08912	42.9N	0.8W	1434	MS	91	91	100	0			
08922	42.8N	0.2W	1660	MS	89	89	100	0			
10850	48.8N	10.7E	457	MS	342	0	0	0	0.4	-5.6	5.6
11116	47.5N	10.8E	870	MS	54	0	0	0	0.7	4.1	4.2
13269	44.3N	19.9E	176	MS	108	0	0	1	0.8	7.8	7.8
14554	44.9N	18.4E	136	S	54	2	4	0	0.8	-13.1	13.1
16344	39.3N	16.4E	1710	S8	110	0	0	2	1.3	5.4	5.6
16538	40.1N	9.3E	1022	S	26	0	0	0	1.0	9.1	9.2
17521	35.2N	33.5E	285	MS	78	78	100	0			

ANTARCTIC:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
89004	71.7S	2.8W	815	MS	91	0	0	1	1.9	-7.6	7.8
89257	75.4S	59.9W	40	S	664	0	0	0	1.6	-8.0	8.2
89263	66.0S	66.1W	20	M	237	14	6	0	1.5	12.1	12.2
89266	72.2S	60.2W	91	S	265	256	97	0	6.6	-0.3	6.6
89272	75.0S	70.8W	1395	M	162	162	100	0			
89512	70.8S	11.8E	140	MS	114	0	0	1	1.5	-4.1	4.4
89610	65.9S	113.1E	90	S	231	0	0	0	1.5	-8.0	8.1
89614	66.6S	111.2E	500	M	236	236	100	0			
89618	66.7S	112.0E	1074	S	69	58	84	42	0.9	13.7	13.7
89744	74.0S	43.1E	3353	S	260	0	0	0	0.9	7.9	8.0
89811	66.7S	112.8E	1366	M	239	0	0	0	1.4	-4.7	4.9

TABLE 4A

MONTHLY MONITORING OF AIRCRAFT OBSERVATIONS
MONITORING CENTRE: EXETER
MONTH: Sep 2004

Monitoring procedures

Period :One calendar month.

Data monitored :Statistics for each airline carrier.

Area monitored :90°N - 90°S, 180°W - 180°E.

Standard of comparison :Background field from UKMO global model.

Observation times :All hours combined.

Level(s) monitored :300.0 - 150.0 hPa

Elements monitored :TEMP in °C ; WIND in m s^{-1}

Parameters monitored

:N REP. :Number of observations received excluding duplicates.

:PG :Percentage of observations with gross errors.

:PR :Percentage of observations rejected by quality control including rejections from the duplicate check.

:PC :Percentage of observations with calm winds.

:RMS :Root Mean Square difference of observations from background values excluding those with gross errors in Temperature & vector wind.

:BIAS :Mean difference of observations from background values excluding those with gross errors in Temperature & Wind Speed.

GROSS ERROR LIMITS :10.0 °C ; 60 m s^{-1} Vector Wind

SELECTION CRITERIA :N REP ≥ 20

NB : All American ACARS data are grouped together and statistics are shown at the bottom of the table as "US ACARS".

		TEMPERATURE						WIND			
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
AAH	4065	0	42	1.4	0.3	4016	0	42	0	5.2	0.6
AAL	5564	0	38	1.3	0.1	5298	0	38	0	5.6	0.3
AAR	1337	0	4	1.5	-0.6	1319	0	5	0	7.6	0.2
ACA	2195	0	10	1.5	0.1	1807	0	12	0	7.5	0.5
ACI	110	0	9	1.3	0.5	110	0	9	0	4.8	-0.3
AEA	1442	0	2	1.4	0.1	1199	0	3	0	7.0	0.6
AEL	352	1	6	1.6	0.3	349	0	5	0	7.8	0.1
AFL	668	1	4	2.1	0.3	438	1	3	0	7.8	0.3
AFR	1207	0	6	1.4	0.3	1200	0	7	0	7.8	0.4
AJM	329	0	2	1.3	-0.1	297	0	4	0	8.2	0.4
AJX	268	0	4	1.6	0.6	264	0	5	0	7.4	0.6
AMD	129	0	64	1.6	1.1	129	0	64	0	5.4	0.8
AME	29	0	3	1.4	-0.7	28	0	4	0	4.7	0.8
AMT	1710	1	45	1.2	0.1	1681	0	45	0	5.5	0.3
AMX	410	0	3	1.4	0.3	391	0	6	0	10.7	0.3
ANA	27	0	4	1.2	0.1	29	0	3	0	6.6	1.4
ANZ	5192	0	26	1.4	0.1	5174	0	26	0	6.2	0.2
ATN	85	2	100	3.0	-0.4	84	0	21	0	10.4	3.4
AUA	55	2	84	6.8	6.3	50	0	0	0	7.7	2.1
AVA	293	0	4	1.7	0.9	304	0	5	0	7.8	0.9
AVN	146	1	42	1.3	0.1	146	0	40	0	5.2	0.3
AXF	53	0	38	0.8	-0.2	53	0	38	0	7.4	0.3
AZA	637	0	2	1.3	-0.1	566	0	3	0	7.8	0.2
BAL	451	0	4	1.2	0.0	435	0	6	0	7.8	0.0
BAW	426	0	16	1.8	-0.4	327	1	18	0	6.5	0.3
BBR	220	1	3	1.4	0.6	218	0	100	0	12.6	3.7
BPA	279	1	7	2.8	1.4	271	0	4	0	7.1	0.6
BSK	23	0	43	1.2	0.2	23	0	43	0	4.9	0.1
BWA	388	1	3	1.4	0.2	341	0	3	0	7.9	0.9
CAL	31	3	10	2.5	0.7	31	0	0	0	6.6	1.1
CCA	403	1	15	2.3	0.5	407	0	18	0	13.1	-0.6
CES	512	2	7	1.6	-0.1	509	1	9	0	9.2	0.4
CFC	28	0	11	1.8	0.0	30	0	20	0	14.4	-1.9
CFG	908	0	3	1.5	0.1	766	0	4	0	7.4	0.3
CKK	119	0	8	1.5	0.2	127	0	10	0	10.3	0.7
CKS	363	0	27	1.7	-0.3	342	0	29	0	8.8	0.4
CLX	314	1	4	1.7	-0.5	216	0	5	0	6.7	0.0
COA	245	1	36	1.5	0.2	210	0	40	0	8.3	0.0
CPA	20	0	10	1.2	0.0	21	0	10	0	4.6	-0.4
CRL	479	1	3	1.7	0.8	464	0	4	0	8.2	0.1
CSN	111	0	6	1.5	-0.2	110	2	10	0	8.2	1.1
CTM	38	0	32	1.2	-0.7	37	0	32	0	4.4	0.2
CUB	230	2	7	1.9	0.4	220	0	5	0	9.1	-0.3
DAL	3135	0	38	1.4	0.2	2950	0	40	0	5.9	0.2
DHL	70	0	100	6.5	-6.3	52	0	27	0	13.0	1.7
DLH	852	0	17	1.7	0.0	774	0	19	0	6.8	0.1
DRD	270	1	4	1.5	0.0	267	0	5	0	8.1	-0.6
EDW	87	1	5	2.2	0.3	83	0	8	0	9.3	-1.0
EEZ	97	0	4	1.8	0.0	92	0	9	0	11.3	0.9
EIA	200	0	15	1.4	-0.1	201	0	100	0	17.4	4.6
ELY	81	0	0	1.4	0.5	70	0	3	0	8.3	0.3
ETH	42	0	5	1.5	0.0	35	0	3	0	5.0	0.6
EUK	26	0	8	2.6	-0.6	27	0	0	0	4.9	-0.1
EVA	155	1	2	1.4	0.1	173	0	1	0	6.1	0.2
FCA	271	1	2	1.2	0.4	257	1	4	0	8.2	0.5
FDX	1532	0	52	1.4	0.3	1470	0	53	0	6.8	0.5
FIN	213	1	5	1.6	-0.1	168	0	4	0	8.3	0.2
FJI	848	3	32	1.7	0.8	839	1	30	0	6.9	0.0
FLC	30	0	17	2.2	2.0	28	0	18	0	7.0	1.2

	TEMPERATURE					WIND					
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
FOM	813	0	26	1.5	-0.1	810	0	25	0	5.8	0.8
FWI	564	1	3	1.4	-0.2	557	0	5	0	8.6	0.2
GCO	73	0	10	1.0	0.2	78	0	41	0	6.1	0.5
GRL	54	0	0	1.4	-0.3	48	0	0	0	4.5	0.9
GTI	153	0	8	2.0	0.8	152	0	11	0	9.9	1.2
HAL	4495	0	41	1.7	0.6	4406	0	41	0	5.9	0.2
HXL	295	0	1	1.2	-0.1	284	0	3	0	7.2	0.3
IBE	3412	0	3	1.4	0.2	3367	0	5	0	7.9	0.2
ICE	692	1	3	1.4	0.2	543	0	3	0	6.7	0.5
ISR	30	0	3	1.9	0.0	21	0	0	0	4.9	0.9
IWD	661	1	3	1.4	0.2	649	0	4	0	7.2	0.5
JAL	2807	0	3	1.7	0.7	2735	0	4	0	7.5	0.5
JAZ	600	1	4	1.3	0.9	588	0	4	0	6.4	0.5
JBU	55	0	0	0.9	0.4	58	0	2	0	5.8	2.1
KAL	2081	1	6	1.5	0.1	2055	0	7	0	7.8	0.4
KLM	1274	0	3	1.7	0.2	1037	0	4	0	7.6	0.4
LAN	431	0	2	1.4	0.0	431	0	2	0	5.1	1.1
LAP	41	0	49	2.7	1.5	40	0	48	0	8.8	2.0
LDI	381	2	3	1.2	0.2	344	0	4	0	8.3	0.6
LNE	116	0	3	1.7	0.4	114	0	1	0	8.0	0.8
LOT	171	0	3	2.0	-0.9	138	0	2	0	6.4	0.6
LTU	900	0	3	1.4	0.1	783	0	5	0	7.7	0.6
LXR	122	2	5	1.2	0.3	109	0	6	0	8.0	-0.5
MAS	361	0	7	1.8	0.2	355	0	6	0	6.3	0.1
MMZ	62	0	2	1.3	-0.5	60	0	5	0	7.6	0.9
MON	50	0	6	1.6	0.5	43	0	7	0	5.9	-0.2
MPD	593	0	1	1.4	0.3	580	0	2	0	6.5	0.5
MPH	570	1	4	1.8	-0.7	470	0	3	0	7.1	0.3
MXA	92	0	13	2.7	1.3	95	0	100	0	13.5	-2.8
MYT	386	0	3	1.5	0.0	318	0	3	0	7.7	0.4
NAO	236	0	23	1.7	0.3	232	0	23	0	7.8	0.8
NCA	1150	0	3	1.7	0.2	833	0	4	0	7.0	0.3
NWA	7050	1	14	1.7	0.2	6925	0	14	0	8.1	0.4
NZL	3533	0	9	1.4	-0.1	3533	0	9	0	5.1	0.4
OAE	612	0	35	1.2	0.0	568	0	48	0	11.2	2.5
OOM	99	1	7	2.3	-1.0	79	0	4	0	7.0	-0.7
PAC	360	1	15	1.3	-0.1	365	0	16	0	7.2	0.1
PAL	1287	0	3	1.5	0.2	1235	0	5	0	8.2	0.5
PAO	286	0	43	1.3	0.4	285	0	44	0	7.1	0.9
PBI	622	0	32	1.5	-0.1	625	0	32	0	6.8	0.6
PLM	475	0	4	1.9	1.3	395	0	5	0	8.6	0.2
QFA	3719	0	45	1.4	0.2	3708	0	45	0	5.6	0.0
QQA	44	0	41	2.0	-0.3	44	0	41	0	5.5	1.3
RAM	317	0	3	1.7	0.9	273	0	4	0	8.8	0.4
RCH	188	0	100	3.0	-0.6	174	0	100	0	13.2	0.9
RRR	66	2	5	1.8	0.0	66	0	2	0	6.1	0.2
RZO	875	0	4	1.3	-0.1	854	0	4	0	7.5	0.6
SAA	65	2	2	1.1	0.3	64	0	0	0	5.9	0.9
SEU	182	0	2	1.0	0.3	175	1	4	0	6.1	0.4
SIA	361	0	2	1.6	0.4	358	0	3	0	4.8	0.0
SLM	120	0	0	1.0	0.6	116	0	3	0	6.5	0.9
SQC	52	0	2	1.3	0.1	52	0	2	0	4.7	0.6
SSV	41	0	2	1.9	0.6	33	0	9	0	12.0	1.4
SVA	20	0	10	1.3	-0.3	23	0	13	0	7.4	-2.1
SVH	136	0	6	1.1	0.9	136	0	6	0	3.4	-0.3
TAG	30	0	23	1.4	-0.6	30	0	23	0	5.2	0.9
TAM	51	4	69	2.5	-0.5	51	0	65	0	18.2	6.6
TAP	808	1	2	1.2	-0.3	780	0	4	0	8.1	0.7
TCX	57	0	2	1.3	0.4	46	0	4	0	7.2	2.5

	TEMPERATURE					WIND					
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
THA	195	1	2	1.3	0.1	196	1	2	0	5.5	0.4
THT	897	0	22	1.1	0.6	892	0	21	0	5.3	0.8
TPA	38	0	0	0.9	0.5	33	0	0	0	6.1	-0.4
TSC	322	1	2	1.6	-0.2	240	0	1	0	4.9	0.7
UAE	528	0	4	1.3	0.4	528	0	4	0	4.1	0.4
UAL	182002	0	95	1.0	-0.1	181874	0	95	0	4.6	0.4
UPS	1456	1	58	1.8	0.6	1423	0	57	0	6.9	0.3
USA	74	4	7	1.4	0.8	73	0	3	0	6.8	1.9
VHF	34	0	0	1.1	0.2	34	3	6	0	10.6	0.6
VIR	171	0	3	1.7	-0.1	145	1	4	0	7.7	1.0
VPB	44	5	16	2.7	1.9	41	0	17	0	12.2	-0.1
VRG	62	0	35	2.8	0.4	60	0	100	0	12.5	1.2
VVJ	66	0	14	1.2	-0.2	66	0	14	0	7.3	1.5
VVR	83	2	39	2.5	1.7	96	0	36	0	7.3	0.7
WOA	320	1	6	1.5	0.4	303	0	8	0	7.9	0.4
XLA	169	0	4	1.4	0.5	165	0	5	0	7.4	0.2
YSS	57	0	0	1.7	0.9	54	0	4	0	7.6	0.6

	TEMPERATURE					WIND					
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
AU	33500	0	8	1.2	0.7	33504	0	8	0	5.0	0.5
CA	816	0	74	1.7	1.2	816	0	74	0	4.9	-0.1
EU	197449	0	27	1.2	0.4	197447	0	26	0	4.4	0.3
HK	3447	0	22	1.2	0.6	3447	0	22	0	5.4	0.4
JP	26209	0	52	1.6	1.0	26209	0	52	0	5.1	0.4
LN	66	0	50	3.0	-2.0	65	0	43	0	8.4	2.6
MK	1658	0	5	1.7	1.4	1632	0	5	0	7.1	1.3
SA	4618	0	7	1.3	0.7	4618	0	7	0	6.1	0.3
TN	46	4	33	2.8	0.5	47	0	28	0	6.8	0.5

	TEMPERATURE					WIND					
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
N	715	0	21	2.2	0.6	665	0	20	0	7.7	0.6
US ACARS	892531	0	63	1.2	0.4	892514	0	63	0	5.0	0.5

TABLE 4B

MONTHLY MONITORING OF AIRCRAFT OBSERVATIONS
MONITORING CENTRE: EXETER
MONTH: Sep 2004

Monitoring procedures

Period :One calendar month.

Data monitored :Statistics for each airline carrier.

Area monitored :90°N - 90°S, 180°W - 180°E.

Standard of comparison :Background field from UKMO global model.

Observation times :All hours combined.

Level(s) monitored :1000.0 – 300.1 hPa

Elements monitored :TEMP in °C ; WIND in m s^{-1}

Parameters monitored

:N REP. :Number of observations received excluding duplicates.

:PG :Percentage of observations with gross errors.

:PR :Percentage of observations rejected by quality control including rejections from the duplicate check.

:PC :Percentage of observations with calm winds.

:RMS :Root Mean Square difference of observations from background values excluding those with gross errors in Temperature & vector wind.

:BIAS :Mean difference of observations from background values excluding those with gross errors in Temperature & Wind Speed.

GROSS ERROR LIMITS :10.0 °C ; 60 m s^{-1} Vector Wind

SELECTION CRITERIA :N REP ≥ 20

NB: All American ACARS data are grouped together and statistics are shown at the bottom of the table as "US ACARS".

		TEMPERATURE						WIND			
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
AAL	198	0	43	1.5	0.0	191	0	44	0	5.7	1.0
ACA	46	2	24	1.4	-0.1	40	3	20	0	6.0	1.2
AFR	31	0	3	1.9	0.1	30	0	7	0	10.4	0.1
AMD	324	0	65	1.2	0.4	324	0	65	0	4.3	0.5
AMT	28	0	36	1.7	-0.3	29	0	31	0	4.3	0.0
ANZ	225	0	27	1.3	-0.1	224	0	27	0	5.2	-0.3
AXF	48	0	60	1.8	-0.2	44	0	59	0	6.1	-1.7
AZA	27	4	7	1.9	-0.6	23	0	0	0	4.1	-0.1
BAL	28	0	7	0.9	-0.1	27	0	7	0	5.4	2.1
CFC	44	2	9	1.2	0.2	36	0	3	0	6.3	0.3
CFG	28	0	0	1.0	0.3	26	0	4	0	7.8	0.6
CKS	33	3	12	2.5	1.0	29	0	10	0	6.9	1.6
DAL	94	0	43	1.3	0.4	86	0	43	0	4.5	1.2
DLH	159	2	13	1.5	0.0	162	1	14	0	7.1	1.3
EIA	27	0	15	1.2	0.5	26	0	100	0	18.7	3.3
FDX	302	0	27	1.7	0.3	279	0	26	0	7.9	0.3
GCO	44	0	5	1.9	-0.2	44	0	52	0	7.3	0.5
HAL	328	0	43	1.3	0.3	324	0	44	0	5.2	1.2
ICE	36	0	3	1.6	-0.8	30	0	7	0	9.9	-0.8
JAL	53	2	9	1.4	0.5	53	2	13	0	10.5	-0.6
KAL	61	0	11	1.6	-0.7	61	0	11	0	6.2	-1.1
KLM	52	2	2	1.4	-0.1	45	0	2	0	9.1	1.1
MAS	22	0	14	1.3	0.3	22	0	14	0	6.3	-0.3
MPH	73	3	3	1.4	-0.6	55	0	2	0	7.5	0.7
NCA	108	0	2	1.5	0.3	93	2	5	0	8.4	0.4
NWA	391	1	5	1.5	0.0	380	0	5	0	6.7	-0.7
NZL	18782	0	56	1.2	0.3	18782	0	56	0	5.1	0.0
OAE	56	0	2	1.8	-0.2	45	0	64	0	21.4	7.0
OCE	20	0	0	4.0	2.4	20	0	0	0	8.0	1.2
PAC	53	0	0	1.2	-0.3	49	0	6	0	6.6	1.2
QFA	202	1	42	1.3	0.2	202	0	41	0	6.6	0.7
RCH	35	6	100	4.0	-0.1	37	0	100	0	9.1	2.9
RRR	62	6	13	2.6	1.5	60	0	8	0	9.7	-0.5
SIA	59	0	0	0.9	0.4	60	0	0	0	3.8	0.8
SVH	5357	0	57	1.5	0.7	5357	0	57	0	4.1	0.7
UAE	78	0	1	1.2	0.5	78	0	1	0	5.3	-0.7
UAL	325856	0	99	1.0	-0.1	325377	0	99	0	4.0	0.4
UPS	134	0	58	1.4	0.0	133	0	59	0	6.3	0.9
VVP	23	22	52	5.0	-3.2	23	0	22	0	10.6	3.5
WOA	95	1	9	2.3	-0.3	88	0	13	0	11.4	1.9

		TEMPERATURE						WIND			
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
AU	25145	0	48	1.1	0.5	25148	0	48	0	4.1	0.2
CA	5403	0	75	1.4	0.6	5403	0	75	0	4.2	0.4
EU	639526	0	69	1.0	0.2	635744	0	69	0	3.7	0.0
HK	3723	0	74	1.3	0.3	3723	0	74	0	4.0	0.0
JP	57701	0	56	1.1	0.4	57701	0	56	0	4.2	0.5
KL	56	0	73	0.7	0.2	56	0	73	0	3.8	-1.4
MK	1481	0	48	1.1	0.4	1458	0	48	0	4.0	0.5
SA	4148	1	56	1.6	0.1	4148	0	56	0	4.7	0.0

		TEMPERATURE						WIND			
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
US ACARS	1527394	0	77	1.1	0.2	1523401	0	78	0	3.9	0.4

Figure 3a. AIRCRAFT 300 - 150 hPa mean daily count. SEPTEMBER 2004
Observations with O-B vector difference greater than 60 ms-1 excluded
Global average number of observations in 24 hours = 47614

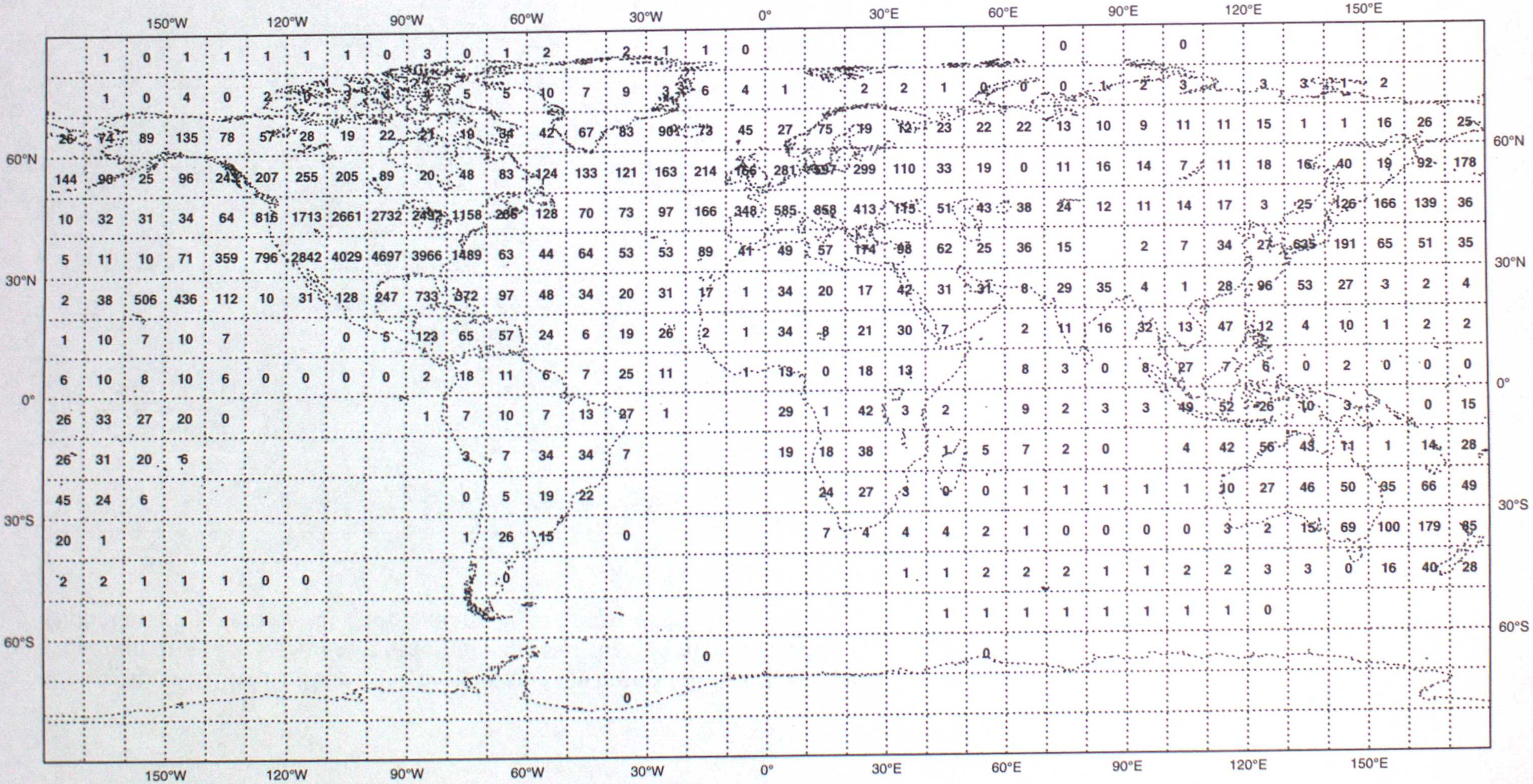

150°W 120°W 90°W 60°W 30°W 0° 30°E 60°E 90°E 120°E 150°E
60°N 30°N 0° 30°S 60°S
1 0 1 1 1 1 1 0 3 0 1 2 2 1 1 0 0 0
1 0 4 0 2 0 3 4 3 5 5 10 7 9 3 6 4 1 2 2 1 0 0 0 1 2 3 3 3 1 2
26 74 89 135 78 57 28 19 22 21 19 34 42 67 83 90 73 45 27 75 19 12 23 22 22 13 10 9 11 11 15 1 1 16 26 25
144 90 25 96 242 207 255 205 89 20 48 83 124 133 121 163 214 166 281 557 299 110 33 19 0 11 16 14 7 11 18 16 40 19 92 178
10 32 31 34 64 816 1713 2661 2732 2492 1158 286 128 70 73 97 166 348 585 858 413 115 51 43 38 24 12 11 14 17 3 25 126 166 139 36
5 11 10 71 359 796 2842 4029 4697 3966 1489 63 44 64 53 53 89 41 49 57 174 98 62 25 36 15 2 7 34 27 635 191 65 51 35
2 38 506 436 112 10 31 128 247 733 372 97 48 34 20 31 17 1 34 20 17 42 31 31 8 29 35 4 1 28 96 53 27 3 2 4
1 10 7 10 7 0 5 123 65 57 24 6 19 26 2 1 34 8 21 30 7 2 11 16 32 13 47 12 4 10 1 2 2
6 10 8 10 6 0 0 0 0 2 18 11 6 7 25 11 1 13 0 18 13 8 3 0 8 27 7 6 0 2 0 0 0
26 33 27 20 0 1 7 10 7 13 27 1 29 1 42 3 2 9 2 3 3 49 52 26 10 3 0 15
26 31 20 6 3 7 34 34 7 19 18 38 1 5 7 2 0 4 42 56 43 11 1 14 28
45 24 6 0 5 19 22 24 27 3 0 0 1 1 1 1 1 10 27 46 50 35 66 49
20 1 1 26 15 0 7 4 4 4 2 1 0 0 0 0 3 2 15 69 100 179 85
2 2 1 1 1 0 0 0 1 1 2 2 2 1 1 2 2 3 3 0 16 40 28
1 1 1 1 1 1 1 1 1 1 1 1 0
0 0
0

Figure 3b. AIRCRAFT 1000 - 301 hPa mean daily count. SEPTEMBER 2004
Observations with O-B vector difference greater than 60 ms-1 excluded
Global average number of observations in 24 hours = 86999

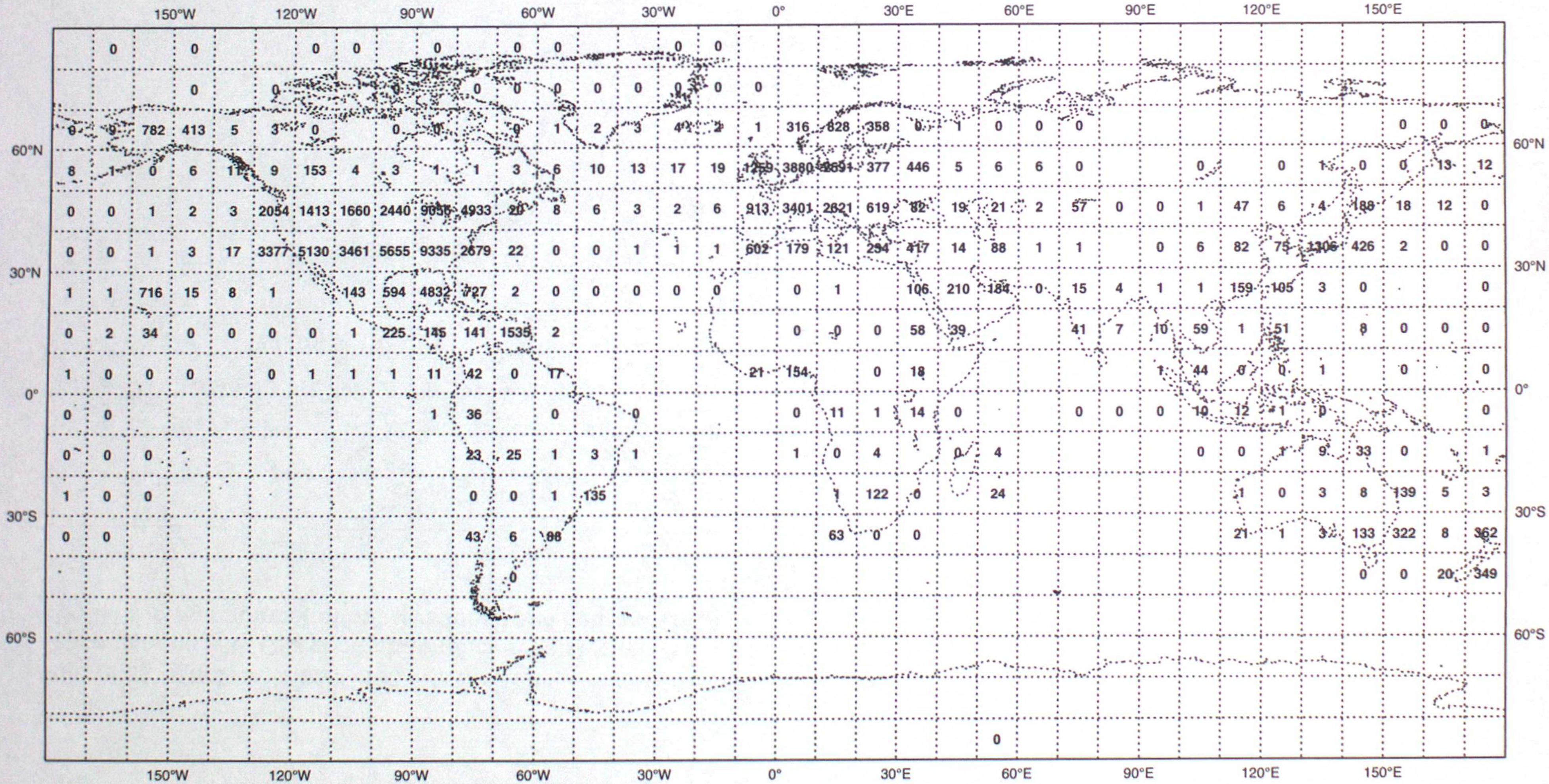

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0 0
0 9 782 413 5 3 0 0 0 0 1 2 3 4 2 1 316 828 358 0 1 0 0 0 0 0 0
8 1 0 6 11 9 153 4 3 1 1 3 6 10 13 17 19 1259 3880 3891 377 446 5 6 6 0 0 0 1 0 0 13 12
0 0 1 2 3 2054 1413 1660 2440 9056 4933 20 8 6 3 2 6 913 3401 2821 619 82 19 21 2 57 0 0 1 47 6 4 188 18 12 0
0 0 1 3 17 3377 5130 3461 5655 9335 2679 22 0 0 1 1 1 602 179 121 254 417 14 88 1 1 0 6 82 75 1306 426 2 0 0
1 1 716 15 8 1 143 594 4832 727 2 0 0 0 0 0 0 1 106 210 184 0 15 4 1 1 159 105 3 0 0
0 2 34 0 0 0 0 1 225 145 141 1535 2 0 0 0 58 39 41 7 10 59 1 51 8 0 0 0
1 0 0 0 0 1 1 1 11 42 0 17 21 154 0 18 1 44 0 0 1 0 0
0 0 1 36 0 0 0 11 1 14 0 0 0 0 10 12 1 0 0
0 0 0 23 25 1 3 1 1 0 4 0 4 0 0 1 9 33 0 1
1 0 0 0 0 1 135 1 122 0 24 1 0 3 8 139 5 3
0 0 43 6 98 63 0 0 21 1 3 133 322 8 362
0 0 0 20 349
0

Figure 4a. AIRCRAFT 300 - 150 hPa mean winds. SEPTEMBER 2004
Observations with O-B vector difference greater than 60 ms-1 excluded
Arrows are plotted where greater than 30 obs are present

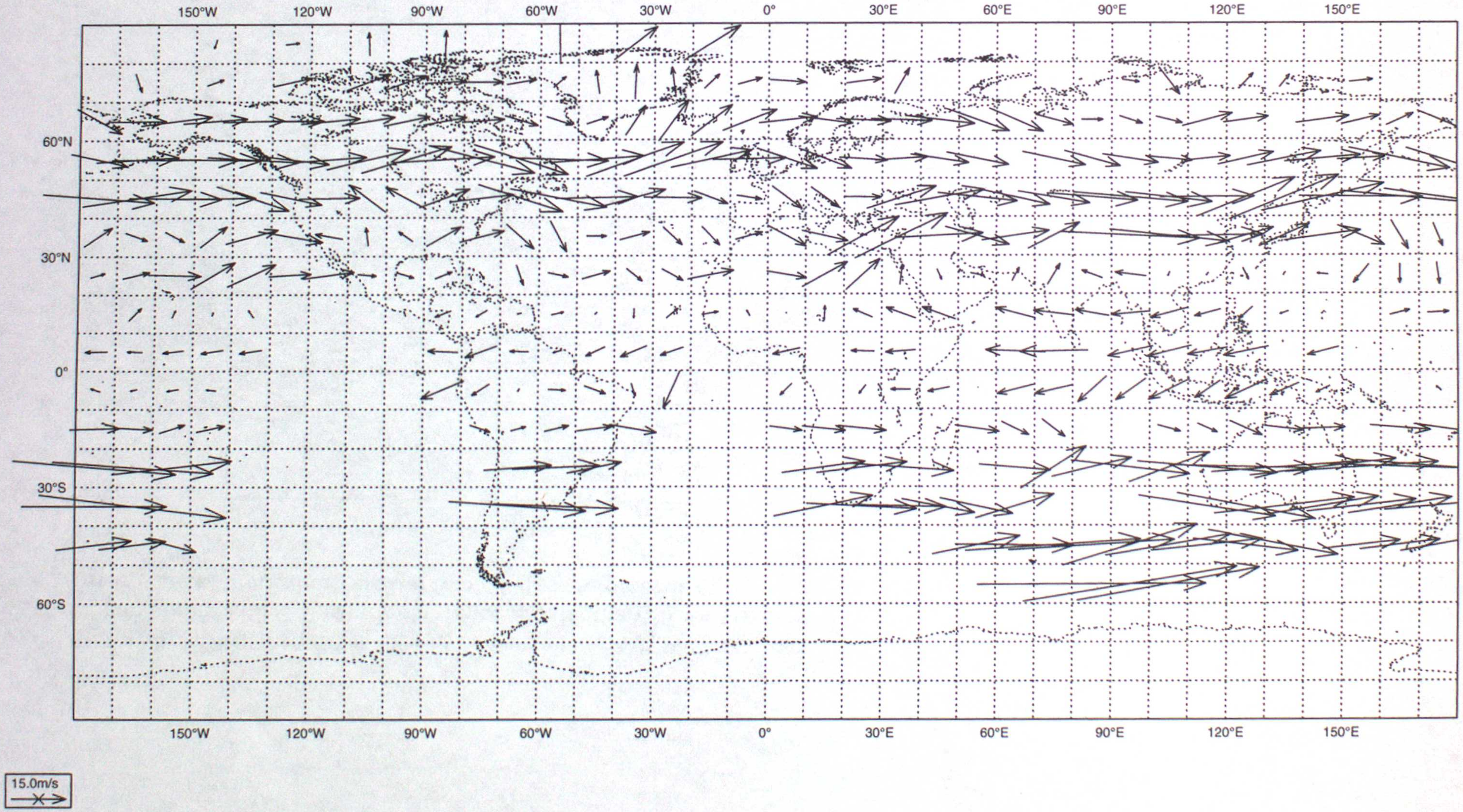

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
15.0m/s

Figure 4b. AIRCRAFT 1000 - 301 hPa mean winds. SEPTEMBER 2004
Observations with O-B vector difference greater than 60 ms-1 excluded
Arrows are plotted where greater than 30 obs are present

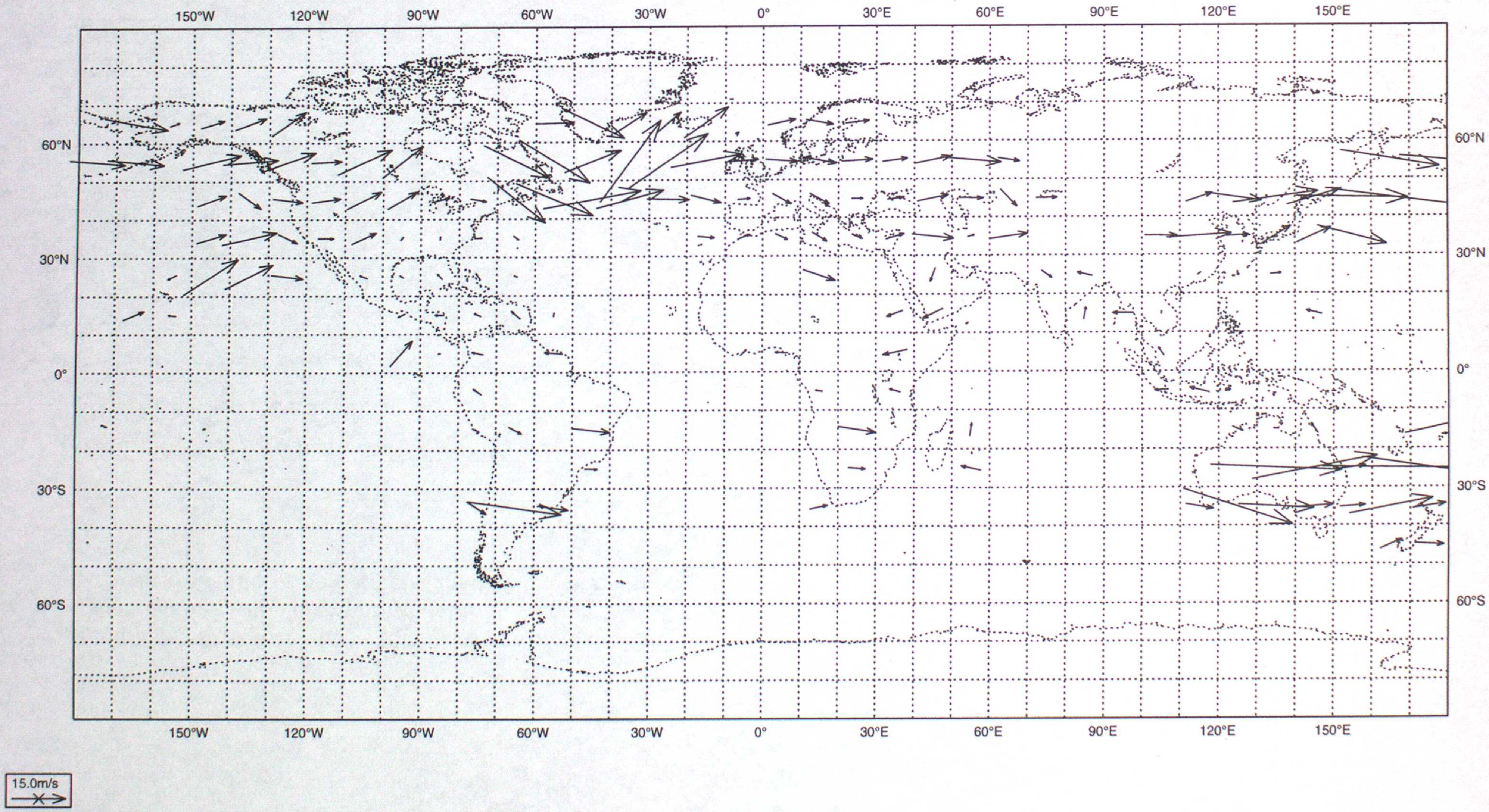

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
15.0m/s

Figure 5a. AIRCRAFT 300 - 150 hPa mean O-B winds. SEPTEMBER 2004
Observations with O-B vector difference greater than 60 ms-1 excluded
Arrows are plotted where greater than 30 obs are present

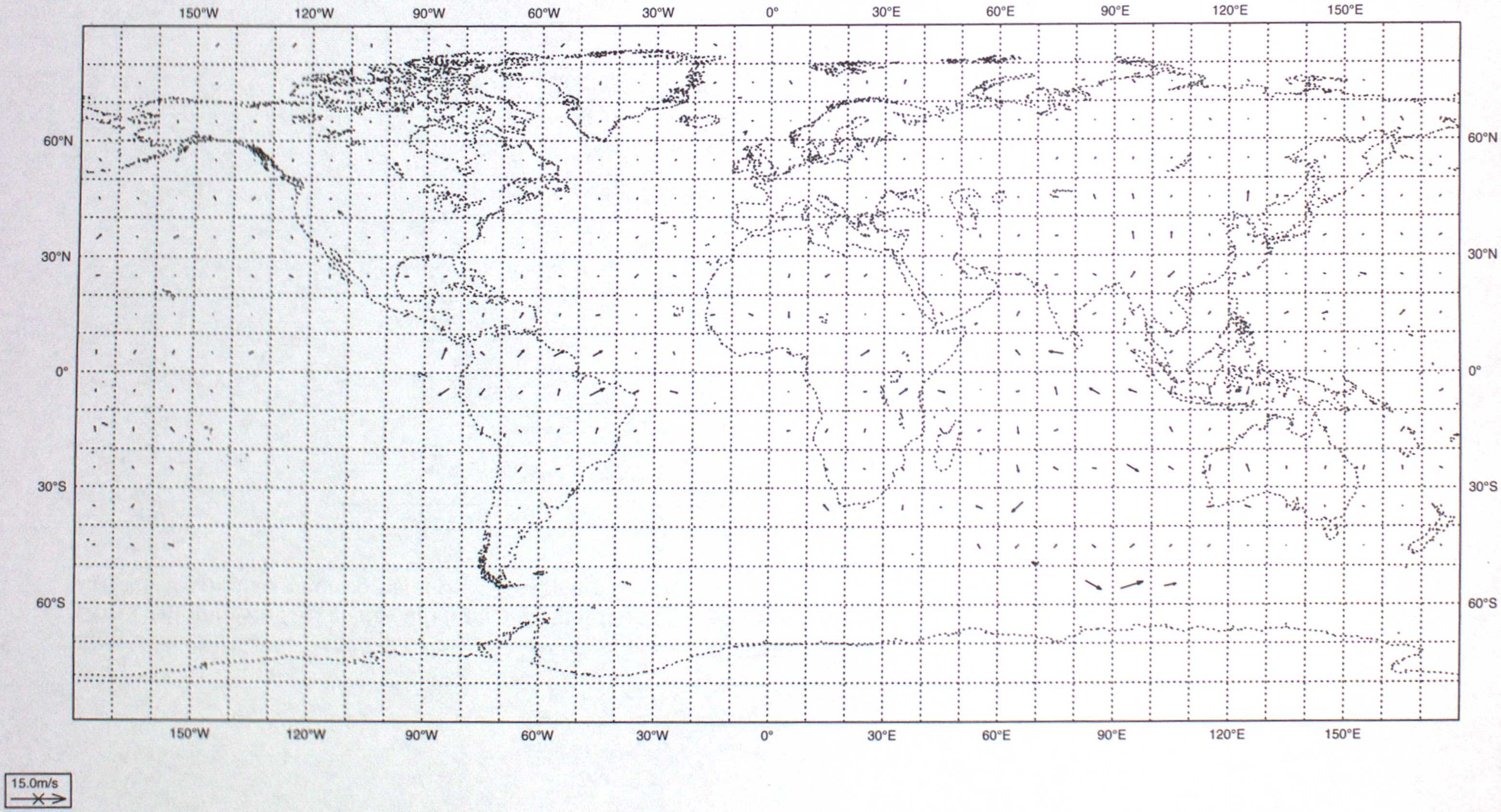

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
15.0m/s

Figure 5b. AIRCRAFT 1000 - 301 hPa mean O-B winds. SEPTEMBER 2004
Observations with O-B vector difference greater than 60 ms-1 excluded
Arrows are plotted where greater than 30 obs are present

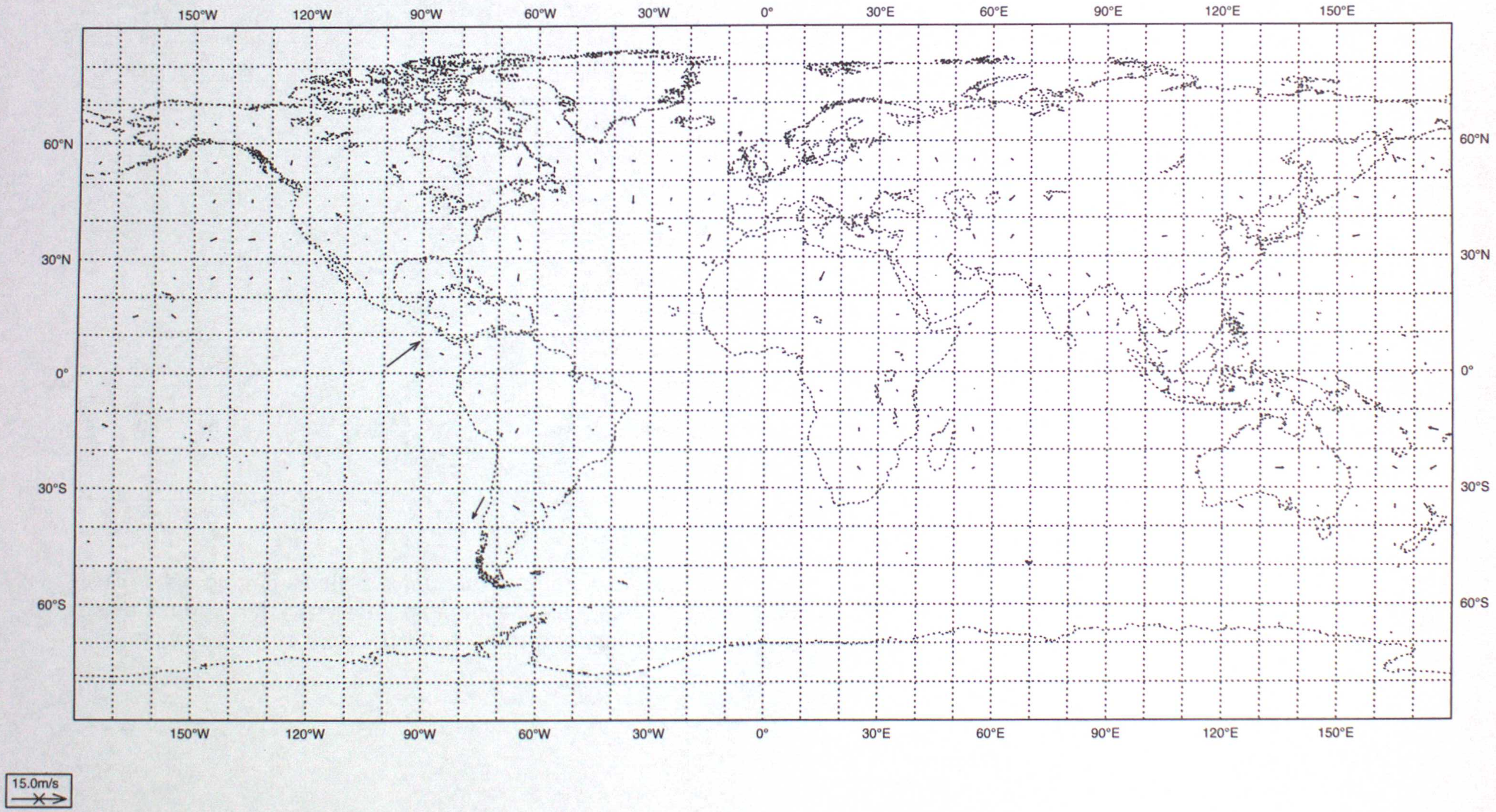

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
15.0m/s

Figure 6a. AIRCRAFT 300 - 150 hPa mean O-B speeds (ms-1). SEPTEMBER 2004
Observations with O-B vector difference greater than 60 ms-1 excluded
Values are printed where greater than 30 obs are present

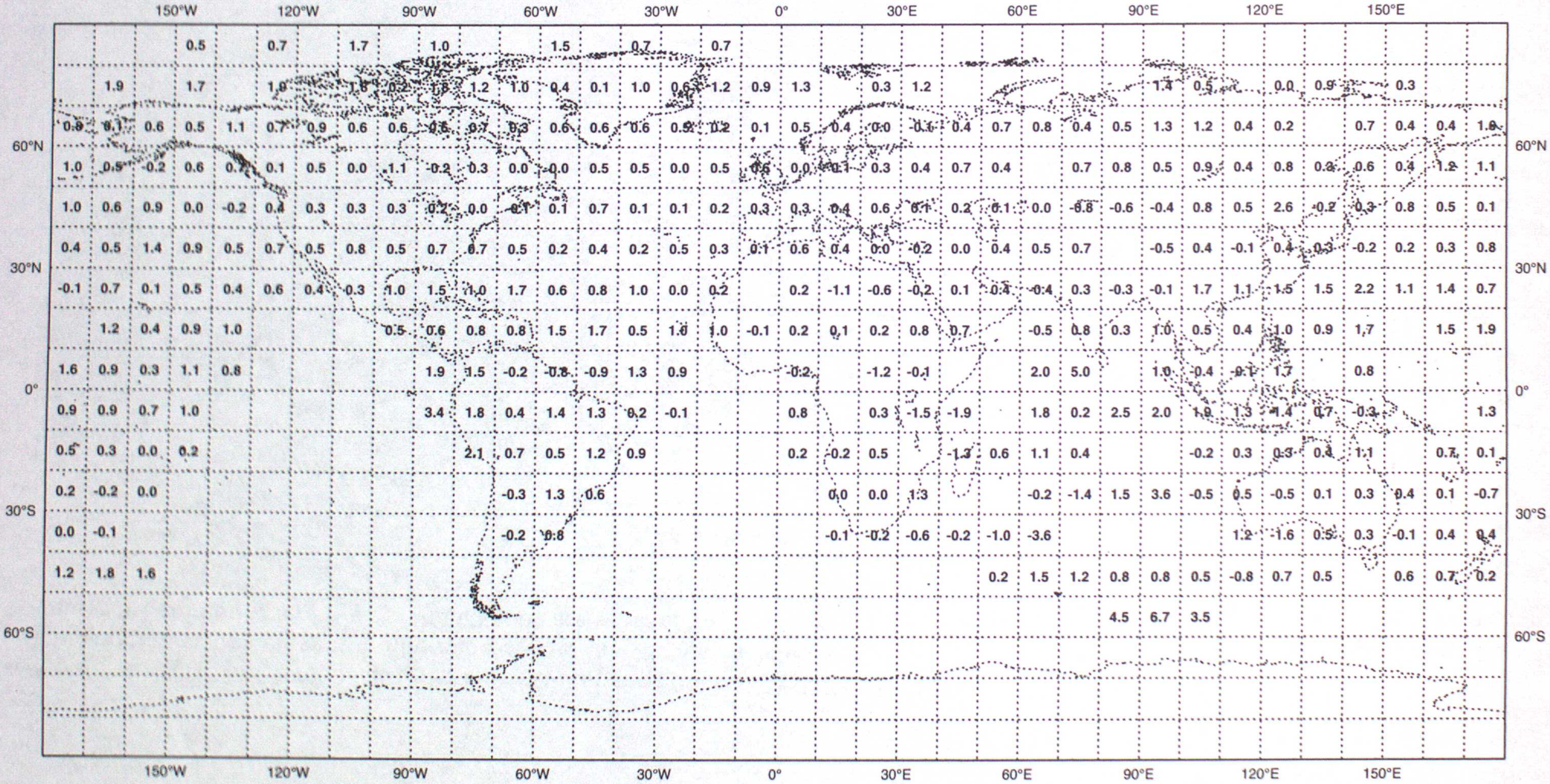

150°W 120°W 90°W 60°W 30°W 0° 30°E 60°E 90°E 120°E 150°E
60°N 30°N 0° 30°S 60°S
0.5 0.7 1.7 1.0 1.5 0.7 0.7
1.9 1.7 1.0 1.8 0.2 1.8 1.2 1.0 0.4 0.1 1.0 0.6 1.2 0.9 1.3 0.3 1.2 1.4 0.5 0.0 0.9 0.3
0.9 0.1 0.6 0.5 1.1 0.7 0.9 0.6 0.6 0.5 0.7 0.3 0.6 0.6 0.6 0.5 0.2 0.1 0.5 0.4 0.0 0.1 0.4 0.7 0.8 0.4 0.5 1.3 1.2 0.4 0.2 0.7 0.4 0.4 1.8
1.0 0.5 -0.2 0.6 0.7 0.1 0.5 0.0 1.1 -0.2 0.3 0.0 0.0 0.5 0.5 0.0 0.5 0.6 0.0 0.1 0.3 0.4 0.7 0.4 0.7 0.8 0.5 0.9 0.4 0.8 0.3 0.6 0.4 1.2 1.1
1.0 0.6 0.9 0.0 -0.2 0.4 0.3 0.3 0.3 0.2 0.0 -0.1 0.1 0.7 0.1 0.1 0.2 0.3 0.3 0.4 0.6 0.1 0.2 0.1 0.0 -0.8 -0.6 -0.4 0.8 0.5 2.6 -0.2 -0.3 0.8 0.5 0.1
0.4 0.5 1.4 0.9 0.5 0.7 0.5 0.8 0.5 0.7 0.7 0.5 0.2 0.4 0.2 0.5 0.3 0.1 0.6 0.4 0.0 0.2 0.0 0.4 0.5 0.7 -0.5 0.4 -0.1 0.4 0.3 -0.2 0.2 0.3 0.8
-0.1 0.7 0.1 0.5 0.4 0.6 0.4 -0.3 1.0 1.5 1.0 1.7 0.6 0.8 1.0 0.0 0.2 0.2 -1.1 -0.6 -0.2 0.1 0.4 -0.4 0.3 -0.3 -0.1 1.7 1.1 1.5 1.5 2.2 1.1 1.4 0.7
1.2 0.4 0.9 1.0 0.5 0.6 0.8 0.8 1.5 1.7 0.5 1.0 1.0 -0.1 0.2 0.1 0.2 0.8 0.7 -0.5 0.8 0.3 1.0 0.5 0.4 1.0 0.9 1.7 1.5 1.9
1.6 0.9 0.3 1.1 0.8 1.9 1.5 -0.2 -0.8 -0.9 1.3 0.9 -0.2 -1.2 -0.1 2.0 5.0 1.0 -0.4 -0.1 1.7 0.8
0.9 0.9 0.7 1.0 3.4 1.8 0.4 1.4 1.3 0.2 -0.1 0.8 0.3 -1.5 -1.9 1.8 0.2 2.5 2.0 1.9 1.3 -1.4 0.7 -0.3 1.3
0.5 0.3 0.0 0.2 2.1 0.7 0.5 1.2 0.9 0.2 -0.2 0.5 -1.3 0.6 1.1 0.4 -0.2 0.3 0.3 0.4 1.1 0.7 0.1
0.2 -0.2 0.0 -0.3 1.3 0.6 0.0 0.0 1.3 -0.2 -1.4 1.5 3.6 -0.5 0.5 -0.5 0.1 0.3 0.4 0.1 -0.7
0.0 -0.1 -0.2 0.8 -0.1 -0.2 -0.6 -0.2 -1.0 -3.6 1.2 -1.6 0.5 0.3 -0.1 0.4 0.4
1.2 1.8 1.6 0.2 1.5 1.2 0.8 0.8 0.5 -0.8 0.7 0.5 0.6 0.7 0.2
4.5 6.7 3.5

Figure 6b. AIRCRAFT 1000 - 301 hPa mean O-B speeds (ms-1). SEPTEMBER 2004
Observations with O-B vector difference greater than 60 ms-1 excluded
Values are printed where greater than 30 obs are present

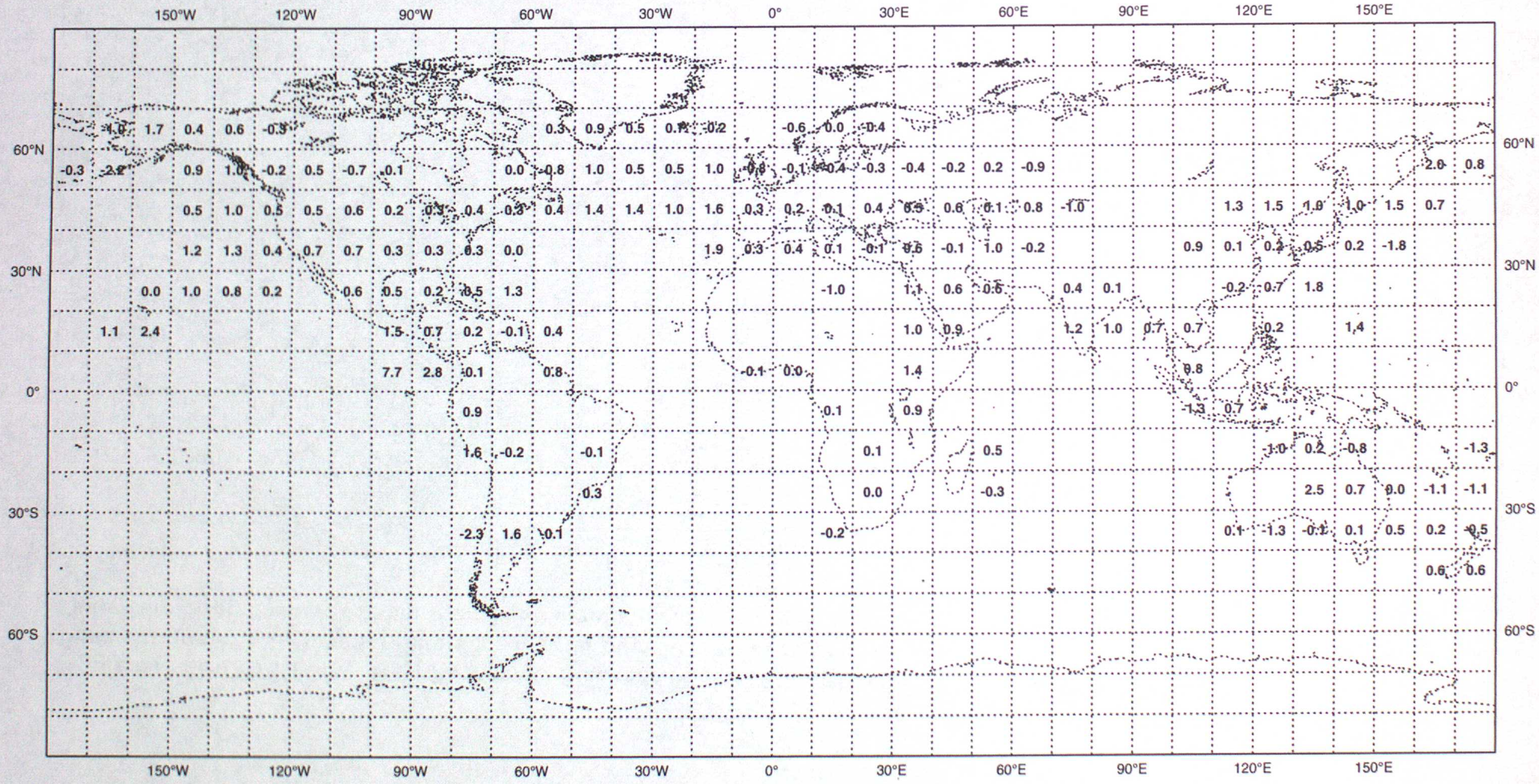

150°W 120°W 90°W 60°W 30°W 0° 30°E 60°E 90°E 120°E 150°E
60°N
30°N
0°
30°S
60°S
-1.0 1.7 0.4 0.6 -0.3 0.3 0.9 0.5 0.1 -0.2 -0.6 0.0 -0.4
-0.3 -2.2 0.9 1.0 -0.2 0.5 -0.7 -0.1 0.0 -0.8 1.0 0.5 0.5 1.0 -0.8 -0.1 -0.4 -0.3 -0.4 -0.2 0.2 -0.9 2.0 0.8
0.5 1.0 0.5 0.5 0.6 0.2 0.3 0.4 0.3 0.4 1.4 1.4 1.0 1.6 0.3 0.2 0.1 0.4 0.5 0.6 0.1 0.8 -1.0 1.3 1.5 1.0 1.0 1.5 0.7
1.2 1.3 0.4 0.7 0.7 0.3 0.3 0.3 0.0 1.9 0.3 0.4 0.1 -0.1 0.6 -0.1 1.0 -0.2 0.9 0.1 0.2 0.5 0.2 -1.8
0.0 1.0 0.8 0.2 0.6 0.5 0.2 0.5 1.3 -1.0 1.1 0.6 0.6 0.4 0.1 -0.2 -0.7 1.8
1.1 2.4 1.5 0.7 0.2 -0.1 0.4 1.0 0.9 1.2 1.0 0.7 0.7 0.2 1.4
7.7 2.8 0.1 0.8 -0.1 0.0 1.4 0.8
0.9 0.1 0.9 -1.3 0.7
1.6 -0.2 -0.1 0.1 0.5 -1.0 0.2 -0.8 -1.3
-0.3 0.0 -0.3 2.5 0.7 0.0 -1.1 -1.1
-2.3 1.6 -0.1 -0.2 0.1 -1.3 -0.1 0.1 0.5 0.2 -0.5
0.6 0.6
150°W 120°W 90°W 60°W 30°W 0° 30°E 60°E 90°E 120°E 150°E

Figure 7a. AIRCRAFT 300 - 150 hPa RMS O-B vector (ms-1). SEPTEMBER 2004
Observations with O-B vector difference greater than 60 ms-1 excluded
Values are printed where greater than 30 obs are present

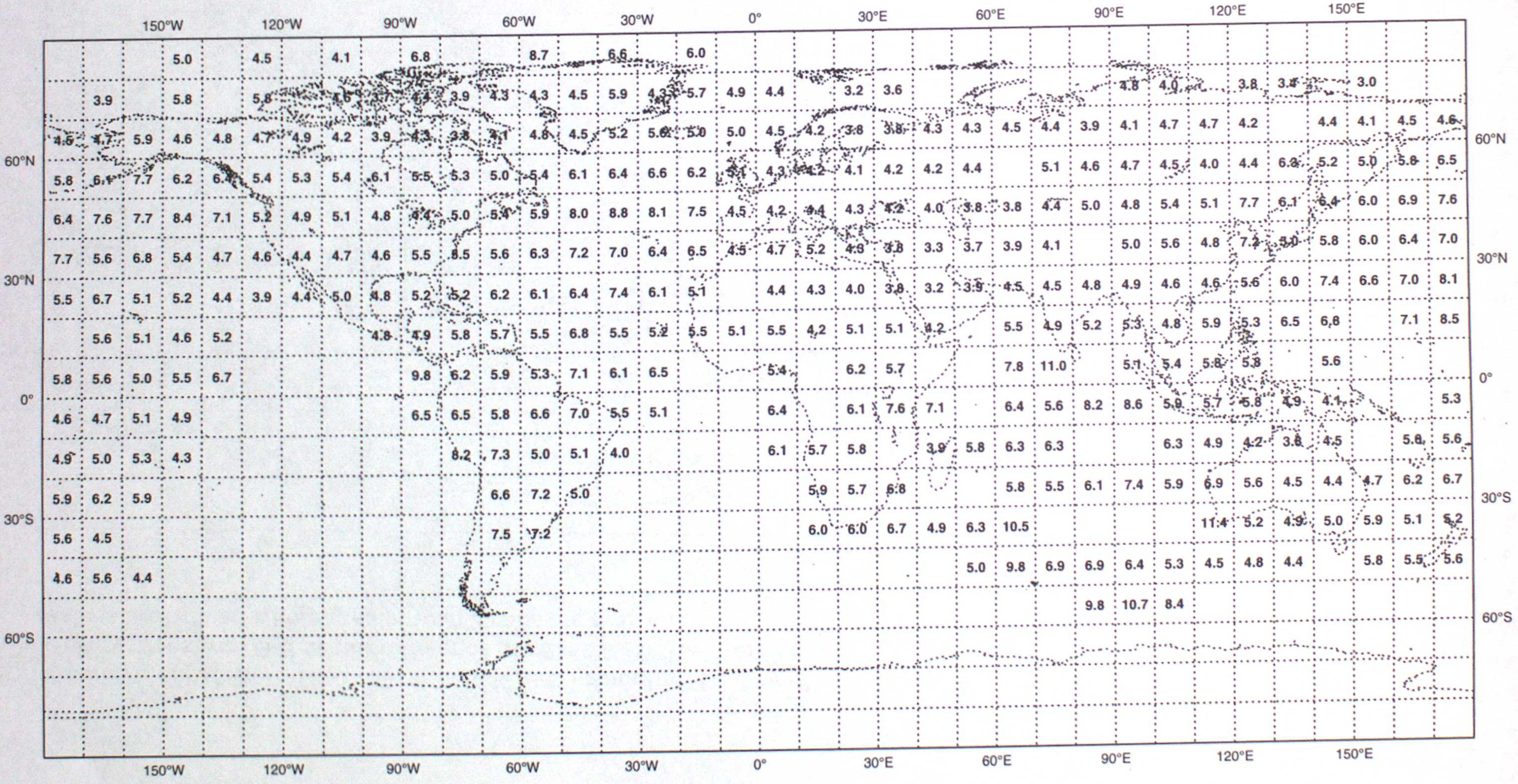

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S

Figure 7b. AIRCRAFT 1000 - 301 hPa RMS O-B vector (ms-1). SEPTEMBER 2004
Observations with O-B vector difference greater than 60 ms-1 excluded
Values are printed where greater than 30 obs are present

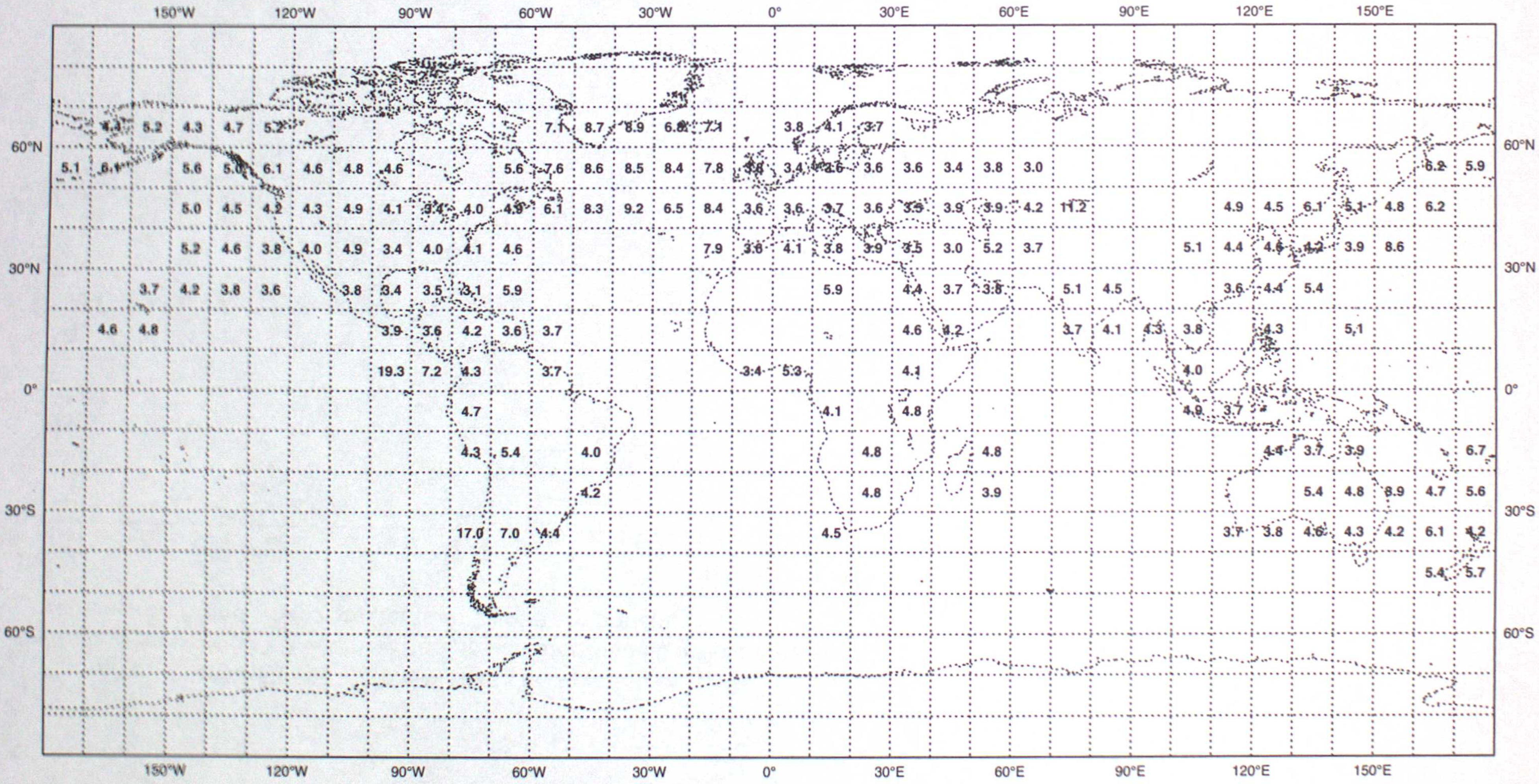

150°W 120°W 90°W 60°W 30°W 0° 30°E 60°E 90°E 120°E 150°E
60°N 30°N 0° 30°S 60°S
4.1 5.2 4.3 4.7 5.2 7.1 8.7 8.9 6.8 7.1 3.8 4.1 3.7
5.1 6.1 5.6 5.0 6.1 4.6 4.8 4.6 5.6 7.6 8.6 8.5 8.4 7.8 3.8 3.4 3.6 3.6 3.6 3.4 3.8 3.0 6.2 5.9
5.0 4.5 4.2 4.3 4.9 4.1 3.4 4.0 4.9 6.1 8.3 9.2 6.5 8.4 3.6 3.6 3.7 3.6 3.5 3.9 3.9 4.2 11.2 4.9 4.5 6.1 5.1 4.8 6.2
5.2 4.6 3.8 4.0 4.9 3.4 4.0 4.1 4.6 7.9 3.6 4.1 3.8 3.9 3.5 3.0 5.2 3.7 5.1 4.4 4.6 4.2 3.9 8.6
3.7 4.2 3.8 3.6 3.8 3.4 3.5 3.1 5.9 5.9 4.4 3.7 3.8 5.1 4.5 3.6 4.4 5.4
4.6 4.8 3.9 3.6 4.2 3.6 3.7 4.6 4.2 3.7 4.1 4.3 3.8 4.3 5.1
19.3 7.2 4.3 3.7 3.4 5.3 4.1 4.0
4.7 4.1 4.8 4.9 3.7
4.3 5.4 4.0 4.8 4.8 4.4 3.7 3.9 6.7
4.2 4.8 3.9 5.4 4.8 8.9 4.7 5.6
17.0 7.0 4.4 4.5 3.7 3.8 4.6 4.3 4.2 6.1 4.2
5.4 5.7

TABLE 5

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS
MONITORING CENTRE: EXETER
MONTH: Sep 2004

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from each unique identifier for radiosonde TEMPs.

Area monitored :90°N - 90°S, 180°W - 180°E.

Standard of comparison :Background field from UKMO global model.

Observation times :00 UTC and 12 UTC.

Level(s) monitored :Standard levels between 1000.0 - 30.0 hPa

Element monitored :GEOPOTENTIAL HEIGHT IN metres

Parameters monitored

:NUM OBS :Number of observations available at level shown during period.

:NUM GROSS :Number of gross errors at level shown during period.

:% REJ :Percentage of observations rejected by quality control at level shown during period excluding those with gross errors.

:SD :SD of difference of observations from background values at level shown excluding those with gross errors.

:BIAS :Mean difference of observations from background values at level shown excluding those with gross errors.

:RMS :Root Mean Square difference of observations from background values at level shown excluding those with gross errors.

:NUM LEVELS :Number of levels satisfying selection criteria.

GROSS ERROR LIMITS :Defined in Appendix I.1

SELECTION CRITERIA : ≥3 levels with ≥10 observations and ≥ 100 m weighted RMS.

ONLY THE WORST LEVEL IS SHOWN WITH UNWEIGHTED RMS

WMO IDENT	OBS TIME	ELM	LEV	LAT/LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS	NUM LEVELS
34247	12	Z	150	50/ 41	27	0	53.8	116.5	128.3	9
42027	00	Z	150	34/ 75	9	1	80.3	-151.2	171.2	5
42027	12	Z	200	34/ 75	14	0	90.4	-66.1	112.0	5
42101	00	Z	100	30/ 76	25	0	116.9	-136.4	179.6	7
42182	00	Z	150	29/ 77	23	4	107.8	-137.4	174.7	10
42182	12	Z	850	29/ 77	27	1	36.1	32.0	48.2	10
42314	00	Z	100	27/ 95	14	0	83.2	-131.2	155.4	5
42314	12	Z	200	27/ 95	10	0	93.5	-101.5	138.0	4
42339	00	Z	250	26/ 73	11	0	91.9	-51.5	105.4	5
42339	12	Z	100	26/ 73	9	1	139.3	22.2	141.0	5
42369	00	Z	1000	27/ 81	16	12	11.4	-74.3	75.2	10
42369	12	Z	1000	27/ 81	7	11	6.7	-92.6	92.8	10
42397	00	Z	150	27/ 88	18	1	57.9	-92.5	109.1	5
42410	00	Z	150	26/ 92	23	1	101.4	-68.3	122.3	8
42410	12	Z	100	26/ 92	13	1	73.6	-175.3	190.1	10
42492	00	Z	150	26/ 85	26	1	85.2	-131.7	156.9	6
42492	12	Z	1000	26/ 85	28	0	22.7	-46.9	52.2	5
42647	00	Z	150	23/ 73	14	0	112.0	-81.0	138.3	5
42667	00	Z	150	23/ 77	14	0	109.8	-86.1	139.6	4
42701	00	Z	30	23/ 85	14	1	156.3	155.6	220.5	7
42701	12	Z	100	23/ 85	16	1	96.1	-137.7	167.9	8
42724	00	Z	150	24/ 91	22	1	80.5	-62.7	102.0	5
42724	12	Z	100	24/ 91	10	0	76.2	-188.4	203.2	5
42809	00	Z	150	23/ 88	17	1	139.6	-79.5	160.7	10
42809	12	Z	150	23/ 88	15	0	128.7	-163.8	208.3	9
42867	00	Z	100	21/ 79	14	2	197.4	-74.0	210.8	8
42867	12	Z	200	21/ 79	21	0	83.2	-67.1	106.9	10
42971	12	Z	1000	20/ 86	27	0	22.4	-36.2	42.6	5
43003	00	Z	1000	19/ 73	29	0	11.2	-80.2	80.9	11
43003	12	Z	1000	19/ 73	25	3	11.6	-85.2	86.0	9
43014	12	Z	200	20/ 75	12	0	74.3	-91.7	118.0	5
43128	00	Z	150	17/ 78	19	0	101.8	-131.7	166.5	5
43150	00	Z	1000	18/ 83	3	26	3.3	-92.0	92.1	6
43150	12	Z	100	18/ 83	10	0	40.3	-176.0	180.6	6
43185	00	Z	1000	16/ 81	18	1	28.3	30.4	41.6	4
43185	12	Z	1000	16/ 81	24	0	38.5	29.5	48.5	11
43192	00	Z	1000	15/ 74	1	26	0.0	-99.0	99.0	6
43279	00	Z	850	13/ 80	29	0	32.6	22.9	39.8	6
43279	12	Z	850	13/ 80	26	0	30.8	23.0	38.5	8
43285	00	Z	200	13/ 75	20	0	44.5	-110.2	118.8	7
43295	00	Z	200	13/ 78	20	0	56.5	-68.5	88.8	4
43295	12	Z	200	13/ 78	19	0	47.8	-83.3	96.0	4
43311	00	Z	250	11/ 73	16	0	78.6	20.0	81.1	5
43333	00	Z	50	12/ 93	12	0	126.5	132.7	183.3	5
43333	12	Z	200	12/ 93	21	0	90.6	-43.7	100.6	6
43346	00	Z	1000	11/ 80	19	0	31.5	10.3	33.1	4
43346	12	Z	200	11/ 80	12	0	125.3	1.6	125.3	7
43353	00	Z	1000	10/ 76	23	4	8.8	-82.0	82.4	5
43353	12	Z	1000	10/ 76	14	7	7.9	-88.5	88.9	4
43371	00	Z	150	8/ 77	21	2	68.9	-165.3	179.1	6
43371	12	Z	150	8/ 77	19	0	77.4	-89.6	118.4	5
78866	00	Z	850	18/ -63	23	0	32.2	27.0	42.0	4
83928	12	Z	850	-30/ -57	2	0	41.5	-40.5	58.0	4
89592	12	Z	50	-67/ 93	9	1	73.7	165.3	181.0	4
97180	00	Z	400	-5/ 120	10	0	45.8	-74.5	87.4	4

TABLE 6

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS
MONITORING CENTRE: EXETER
MONTH: Sep 2004

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from each unique identifier for radiosonde TEMPs.

Area monitored :90°N - 90°S, 180°W - 180°E.

Standard of comparison :Background field from UKMO global model.

Observation times :00 UTC and 12 UTC.

Level(s) monitored :Standard levels between 1000.0 - 100.0 hPa

Element monitored :VECTOR WIND in m s^{-1}

Parameters monitored

- :NUM OBS :Number of observations available at level shown during period.
- :NUM GROSS :Number of gross errors at level shown during period.
- :% REJ :Percentage of observations rejected by quality control at level shown during period excluding those with gross errors.
- :UBIAS,VBIAS :Mean difference of observations of U and V components from background values at level shown excluding those with gross errors.
- :RMS :Root Mean Square difference of observations from background values at level shown excluding those with gross errors.
- :NUM LEVELS :Number of levels satisfying selection criteria.

GROSS ERROR LIMITS :Defined in Appendix I.2

SELECTION CRITERIA : ≥ 10 observations and ≥ 15 m s^{-1} RMS vector wind.

ONLY THE STANDARD LEVEL BETWEEN 1000 - 100 hPa WITH HIGHEST RMS IS SHOWN

WMO IDENT	OBS TIME	ELM	LEV	LAT/LONG	NUM OBS	NUM GROSS	% REJ	UBIAS	VBIAS	RMS	LEVELS
43346	12	V	300	11/ 80	13	0	7	3.5	0.9	17.6	1
43369	00	V	150	8/ 73	20	0	100	-4.4	-0.8	17.1	2
43371	12	V	200	8/ 77	13	0	38	-10.3	1.9	17.9	1
48568	00	V	150	7/ 101	17	0	100	13.3	5.2	18.6	1
48568	12	V	150	7/ 101	16	0	100	14.9	5.6	18.8	1
67083	12	V	150	-19/ 47	22	1	4	-4.7	1.8	24.9	1
67197	00	V	100	-25/ 47	25	1	4	-3.8	1.3	21.8	1
68174	12	V	250	-24/ 29	11	0	100	1.1	-1.1	18.8	1
68263	12	V	400	-26/ 28	15	0	100	-5.7	-6.0	27.3	1
68442	12	V	250	-29/ 26	12	0	100	-21.5	1.5	30.8	2
68461	12	V	250	-28/ 28	12	0	100	-0.4	0.4	15.3	1
68512	12	V	100	-30/ 18	12	2	100	6.0	6.8	22.3	2
68588	12	V	500	-30/ 31	11	0	100	2.4	1.7	15.1	1
68842	12	V	100	-34/ 26	10	0	100	1.8	12.6	21.6	1
72376	00	V	300	37/-108	29	0	100	-1.7	-5.0	15.8	1

TABLE 7

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS
MONITORING CENTRE: EXETER
MONTH: Sep 2004

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from each unique identifier for radiosonde TEMPs.

Area monitored :90°N - 90°S, 180°W - 180°E.

Standard of comparison :Background field from UKMO global model.

Observation times :00 UTC and 12 UTC.

Level(s) monitored :Standard levels between 500.0 - 150.0 hPa

Element monitored :WIND DIRECTION in degrees

Parameters monitored

:NUM OBS :Average number of observations at all levels.

:BIAS :Mean difference of observations from background values from all levels.

:MAX SPREAD :(For observation - background values) Maximum absolute difference of SD at any level from SD at all levels

:SD :SD of difference of observations from background values at all levels.

SELECTION CRITERIA :NUM OBS ≥ 5, and
ABSOLUTE BIAS ≥ 10°, with
SD < 30°, and
MAX SPREAD < 10°

WMO IDENT	OBS TIME	ELM	LAT/LONG	NUM OBS	BIAS	MAX SPREAD	SD
33791	12	DD	48/ 33	22	-12.7	3.5	9.2
42027	12	DD	34/ 75	9	-20.5	9.4	15.1
42182	00	DD	29/ 77	19	20.2	6.6	18.9
57993	00	DD	26/ 115	17	12.8	6.3	21.3
57993	12	DD	26/ 115	15	15.0	4.6	16.5
58968	12	DD	25/ 122	14	15.9	8.3	20.7
62337	00	DD	31/ 34	23	-17.7	1.1	9.8
78397	12	DD	18/ -77	8	10.7	7.4	17.7
78954	00	DD	13/ -59	8	-13.5	9.6	17.5
78954	12	DD	13/ -59	15	-16.7	6.3	16.9

MONITORING OF SATELLITE WINDS

MONITORING CENTRE: EXETER

MONTH: Sep 2004

Monitoring procedures

Period	:One calendar month.
Data monitored	:Reports from GOES-9, GOES-10, GOES-12, METEOSAT-5, METEOSAT-7
Standard of comparison	:Background field from UKMO global model.
Selection Criteria	:number of observations > 10.
Data Extracted	:Layer 701 - 1000 hPa 401 - 700 hPa 101 - 400 hPa
	:Mean wind
	:Mean observation minus background vector wind differences
	:Mean observation minus background speed differences
	:RMS of observation minus background vector differences

Figure 10. SATOB 701 - 1000 hPa mean daily count. SEPTEMBER 2004
Global average number of observations in 24 hours = 176303

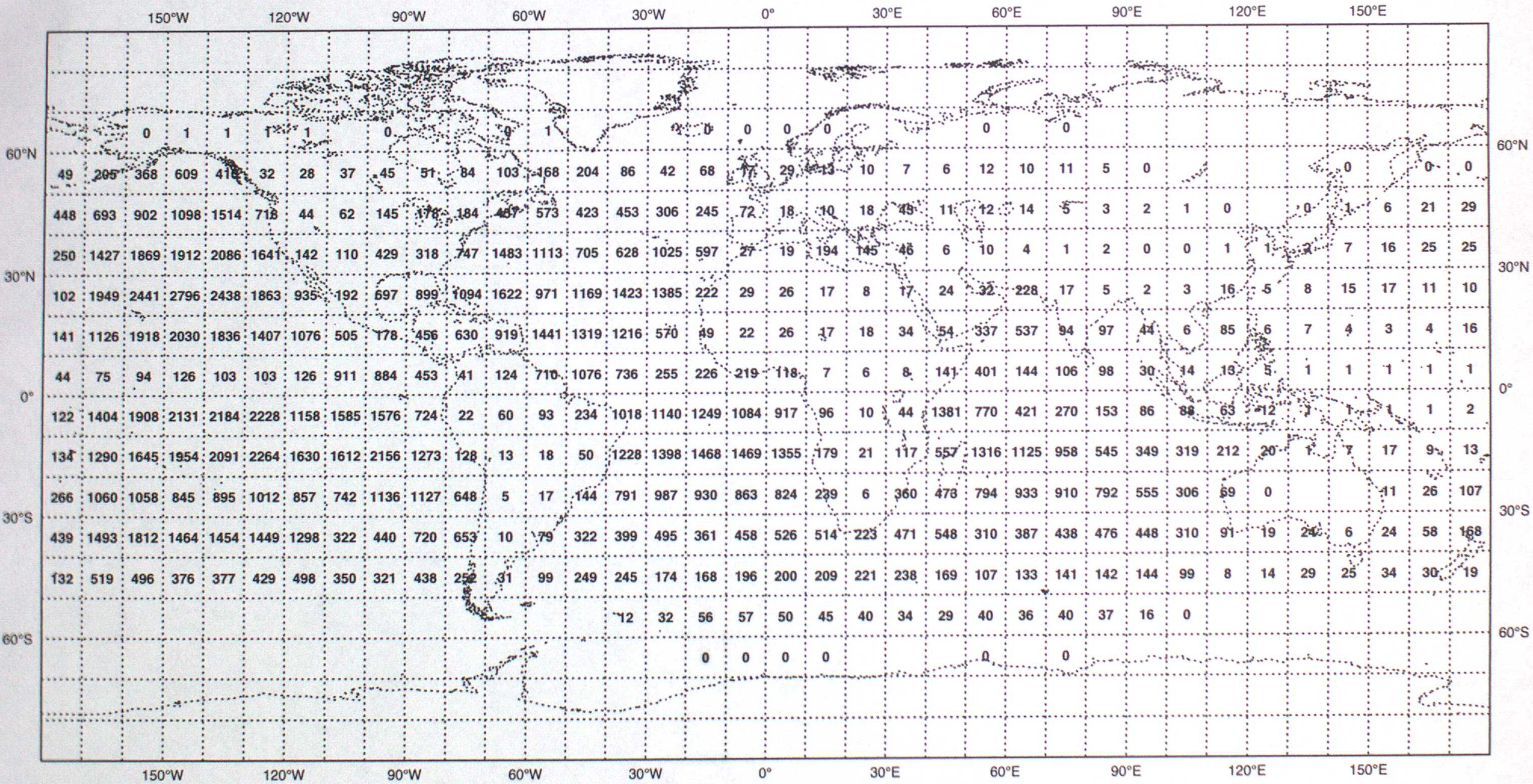

150°W 120°W 90°W 60°W 30°W 0° 30°E 60°E 90°E 120°E 150°E
60°N 30°N 0° 30°S 60°S
0 1 1 1 1 0 0 1 0 0 0 0 0 0
49 205 368 609 416 32 28 37 45 51 84 103 168 204 86 42 68 77 29 13 10 7 6 12 10 11 5 0 0 0 0
448 693 902 1098 1514 718 44 62 145 176 184 487 573 423 453 306 245 72 18 10 18 45 11 12 14 5 3 2 1 0 0 1 6 21 29
250 1427 1869 1912 2086 1641 142 110 429 318 747 1483 1113 705 628 1025 597 27 19 194 145 46 6 10 4 1 2 0 0 1 1 3 7 16 25 25
102 1949 2441 2796 2438 1863 935 192 697 899 1094 1622 971 1169 1423 1385 222 29 26 17 8 17 24 32 228 17 5 2 3 16 5 8 15 17 11 10
141 1126 1918 2030 1836 1407 1076 505 178 456 630 919 1441 1319 1216 570 49 22 26 17 18 34 54 337 537 94 97 44 6 85 6 7 4 3 4 16
44 75 94 126 103 103 126 911 884 453 41 124 710 1076 736 255 226 219 118 7 6 8 141 401 144 106 98 30 14 18 5 1 1 1 1 1
122 1404 1908 2131 2184 2228 1158 1585 1576 724 22 60 93 234 1018 1140 1249 1084 917 96 10 44 1381 770 421 270 153 86 88 63 12 1 1 1 1 2
134 1290 1645 1954 2091 2264 1630 1612 2156 1273 128 13 18 50 1228 1398 1468 1469 1355 179 21 117 557 1316 1125 958 545 349 319 212 20 1 7 17 9 13
266 1060 1058 845 895 1012 857 742 1136 1127 648 5 17 144 791 987 930 863 824 239 6 360 478 794 933 910 792 555 306 69 0 11 26 107
439 1493 1812 1464 1454 1449 1298 322 440 720 653 10 79 322 399 495 361 458 526 514 223 471 548 310 387 438 476 448 310 91 19 24 6 24 58 168
132 519 496 376 377 429 498 350 321 438 252 31 99 249 245 174 168 196 200 209 221 238 169 107 133 141 142 144 99 8 14 29 25 34 30 19
12 32 56 57 50 45 40 34 29 40 36 40 37 16 0
0 0 0 0 0 0

Figure 11. SATOB 701 - 1000 hPa vector mean wind. SEPTEMBER 2004
All observations
Arrows are plotted where greater than 10 obs are present

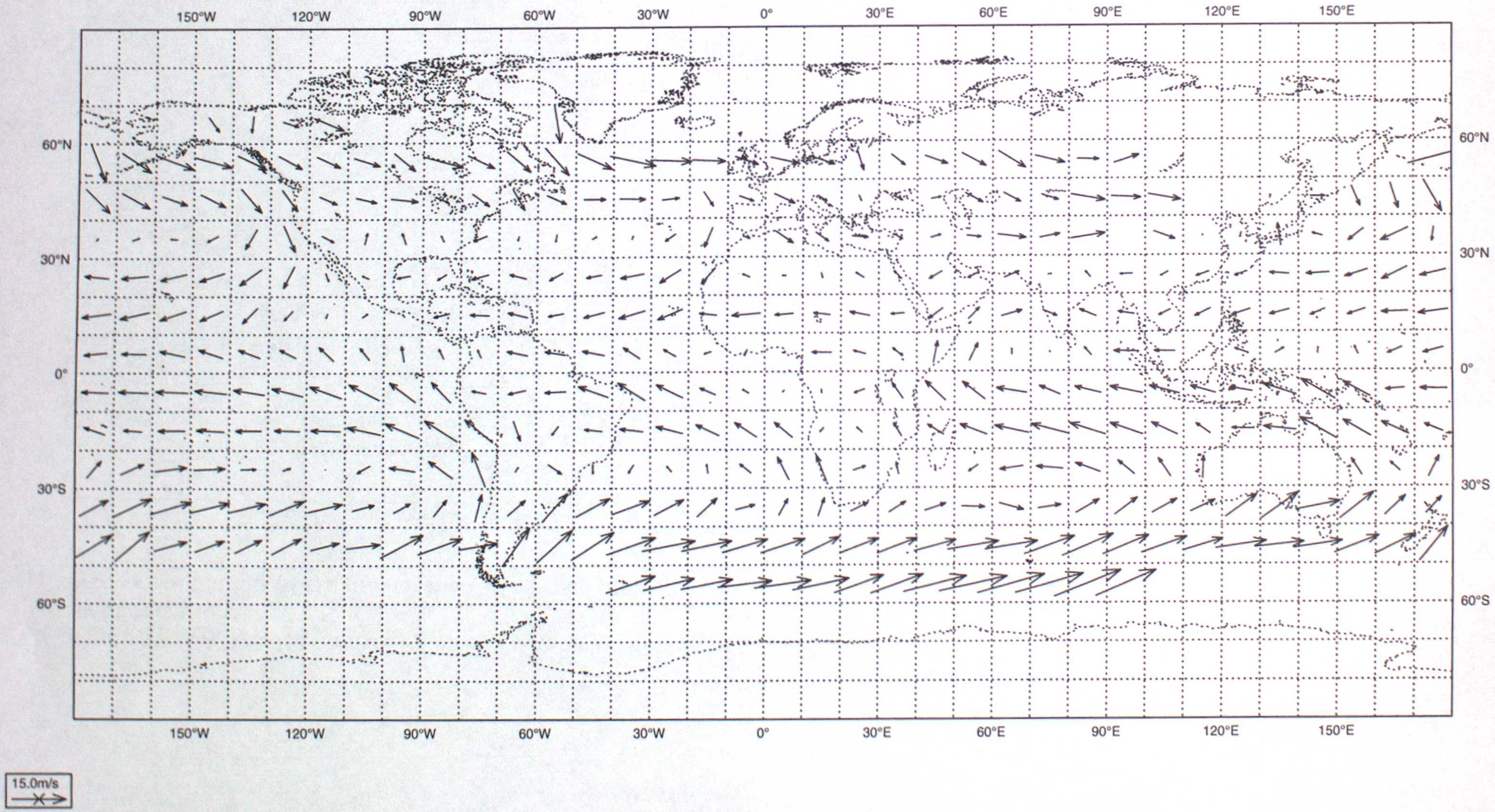

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
15.0m/s

Figure 12. SATOB 701 - 1000 hPa mean vector wind differences. SEPTEMBER 2004
All observations
Arrows are plotted where greater than 10 obs are present

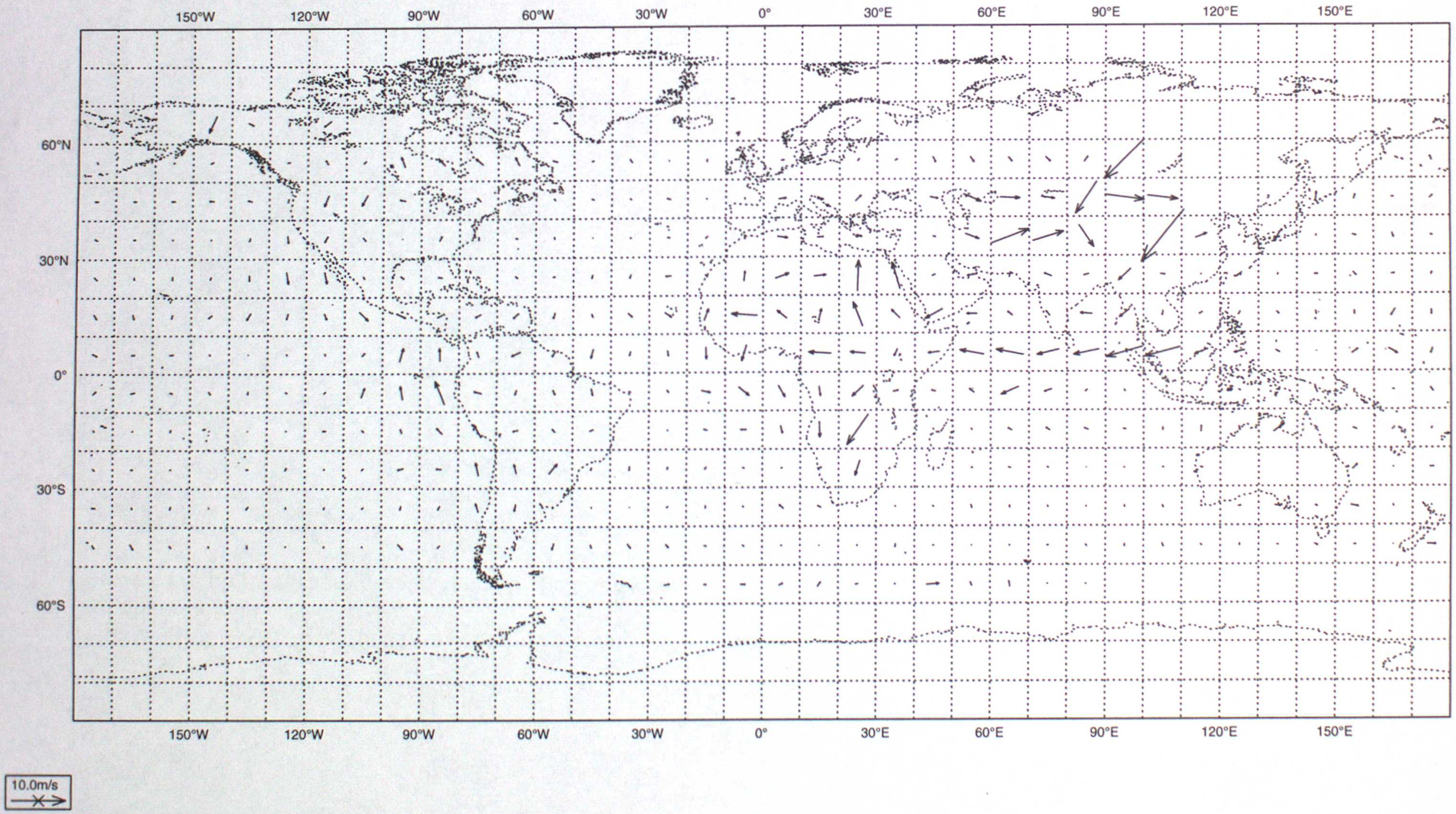

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
10.0m/s

Figure 13. SATOB 701 - 1000 hPa mean O-B speed differences (ms-1). SEPTEMBER 2004
All observations
Values are plotted where greater than 10 obs are present

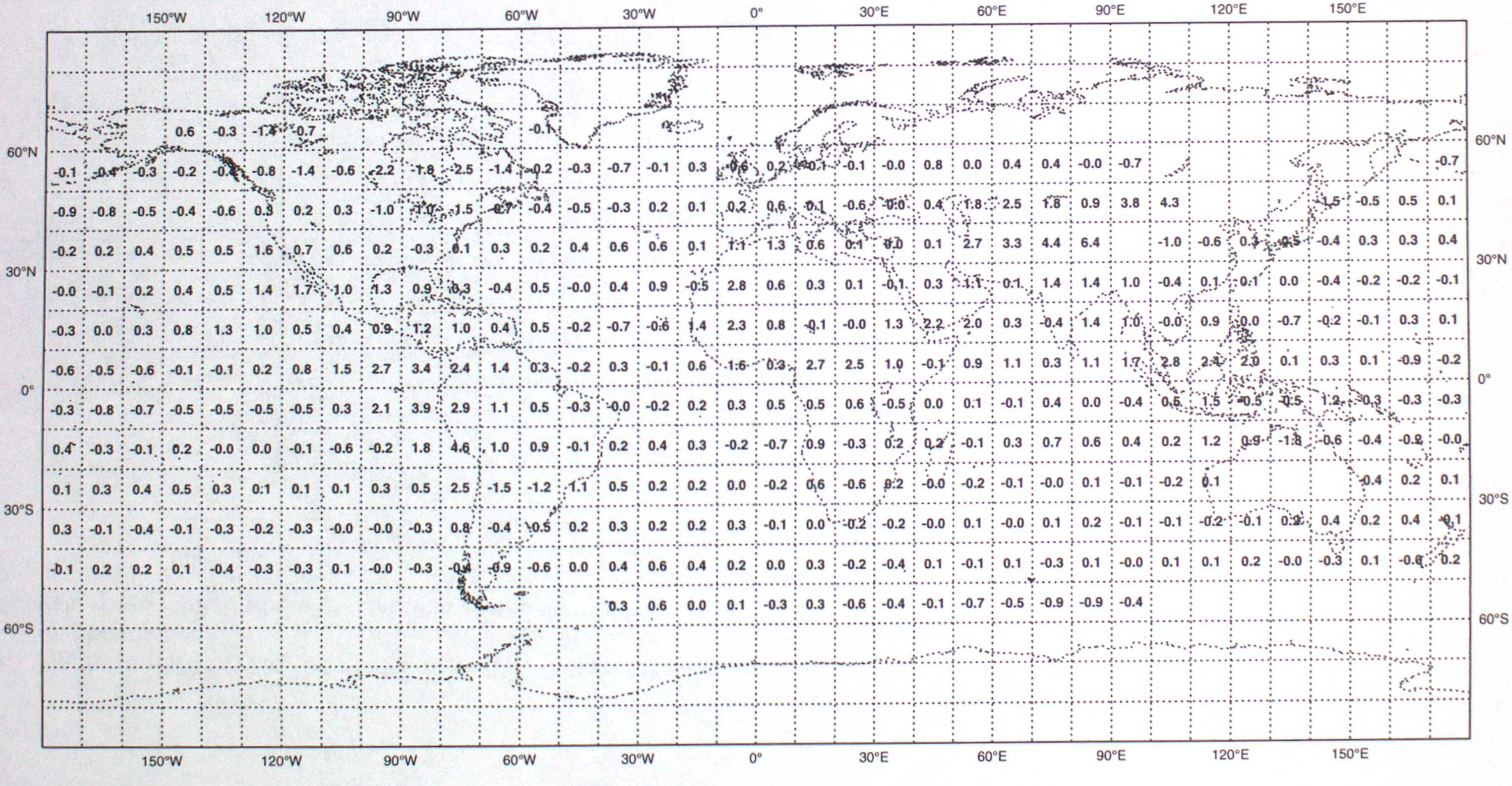

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
0.6 -0.3 -1.4 -0.7 -0.1
-0.1 -0.4 -0.3 -0.2 -0.4 -0.8 -1.4 -0.6 -2.2 -1.8 -2.5 -1.4 -0.2 -0.3 -0.7 -0.1 0.3 -0.6 0.2 -0.1 -0.1 -0.0 0.8 0.0 0.4 0.4 -0.0 -0.7 -0.7
-0.9 -0.8 -0.5 -0.4 -0.6 0.3 0.2 0.3 -1.0 -1.0 -1.5 -0.7 -0.4 -0.5 -0.3 0.2 0.1 0.2 0.6 0.1 -0.6 -0.0 0.4 1.8 2.5 1.8 0.9 3.8 4.3 1.5 -0.5 0.5 0.1
-0.2 0.2 0.4 0.5 0.5 1.6 0.7 0.6 0.2 -0.3 0.1 0.3 0.2 0.4 0.6 0.6 0.1 1.1 1.3 0.6 0.1 0.0 0.1 2.7 3.3 4.4 6.4 -1.0 -0.6 0.3 -0.5 -0.4 0.3 0.3 0.4
-0.0 -0.1 0.2 0.4 0.5 1.4 1.7 1.0 1.3 0.9 0.3 -0.4 0.5 -0.0 0.4 0.9 -0.5 2.8 0.6 0.3 0.1 -0.1 0.3 1.1 0.1 1.4 1.4 1.0 -0.4 0.1 0.1 0.0 -0.4 -0.2 -0.2 -0.1
-0.3 0.0 0.3 0.8 1.3 1.0 0.5 0.4 0.9 1.2 1.0 0.4 0.5 -0.2 -0.7 -0.6 1.4 2.3 0.8 -0.1 -0.0 1.3 2.2 2.0 0.3 -0.4 1.4 1.0 -0.0 0.9 0.0 -0.7 -0.2 -0.1 0.3 0.1
-0.6 -0.5 -0.6 -0.1 -0.1 0.2 0.8 1.5 2.7 3.4 2.4 1.4 0.3 -0.2 0.3 -0.1 0.6 1.6 0.3 2.7 2.5 1.0 -0.1 0.9 1.1 0.3 1.1 1.7 2.8 2.4 2.0 0.1 0.3 0.1 -0.9 -0.2
-0.3 -0.8 -0.7 -0.5 -0.5 -0.5 -0.5 0.3 2.1 3.9 2.9 1.1 0.5 -0.3 -0.0 -0.2 0.2 0.3 0.5 0.5 0.6 -0.5 0.0 0.1 -0.1 0.4 0.0 -0.4 0.5 1.5 -0.5 0.5 1.2 0.3 -0.3 -0.3
0.4 -0.3 -0.1 0.2 -0.0 0.0 -0.1 -0.6 -0.2 1.8 4.6 1.0 0.9 -0.1 0.2 0.4 0.3 -0.2 -0.7 0.9 -0.3 0.2 0.2 -0.1 0.3 0.7 0.6 0.4 0.2 1.2 0.9 -1.8 -0.6 -0.4 -0.2 -0.0
0.1 0.3 0.4 0.5 0.3 0.1 0.1 0.1 0.3 0.5 2.5 -1.5 -1.2 1.1 0.5 0.2 0.2 0.0 -0.2 0.6 -0.6 0.2 -0.0 -0.2 -0.1 -0.0 0.1 -0.1 -0.2 0.1 -0.4 0.2 0.1
0.3 -0.1 -0.4 -0.1 -0.3 -0.2 -0.3 -0.0 -0.0 -0.3 0.8 -0.4 0.5 0.2 0.3 0.2 0.2 0.3 -0.1 0.0 -0.2 -0.2 -0.0 0.1 -0.0 0.1 0.2 -0.1 -0.1 -0.2 -0.1 0.2 0.4 0.2 0.4 0.1
-0.1 0.2 0.2 0.1 -0.4 -0.3 -0.3 0.1 -0.0 -0.3 -0.4 -0.9 -0.6 0.0 0.4 0.6 0.4 0.2 0.0 0.3 -0.2 -0.4 0.1 -0.1 0.1 -0.3 0.1 -0.0 0.1 0.1 0.2 -0.0 -0.3 0.1 -0.6 0.2
0.3 0.6 0.0 0.1 -0.3 0.3 -0.6 -0.4 -0.1 -0.7 -0.5 -0.9 -0.9 -0.4

Figure 14. SATOB 701 - 1000 hPa mean RMS O-B vector differences (ms-1). SEPTEMBER 2004
All observations
Values are plotted where greater than 10 obs are present

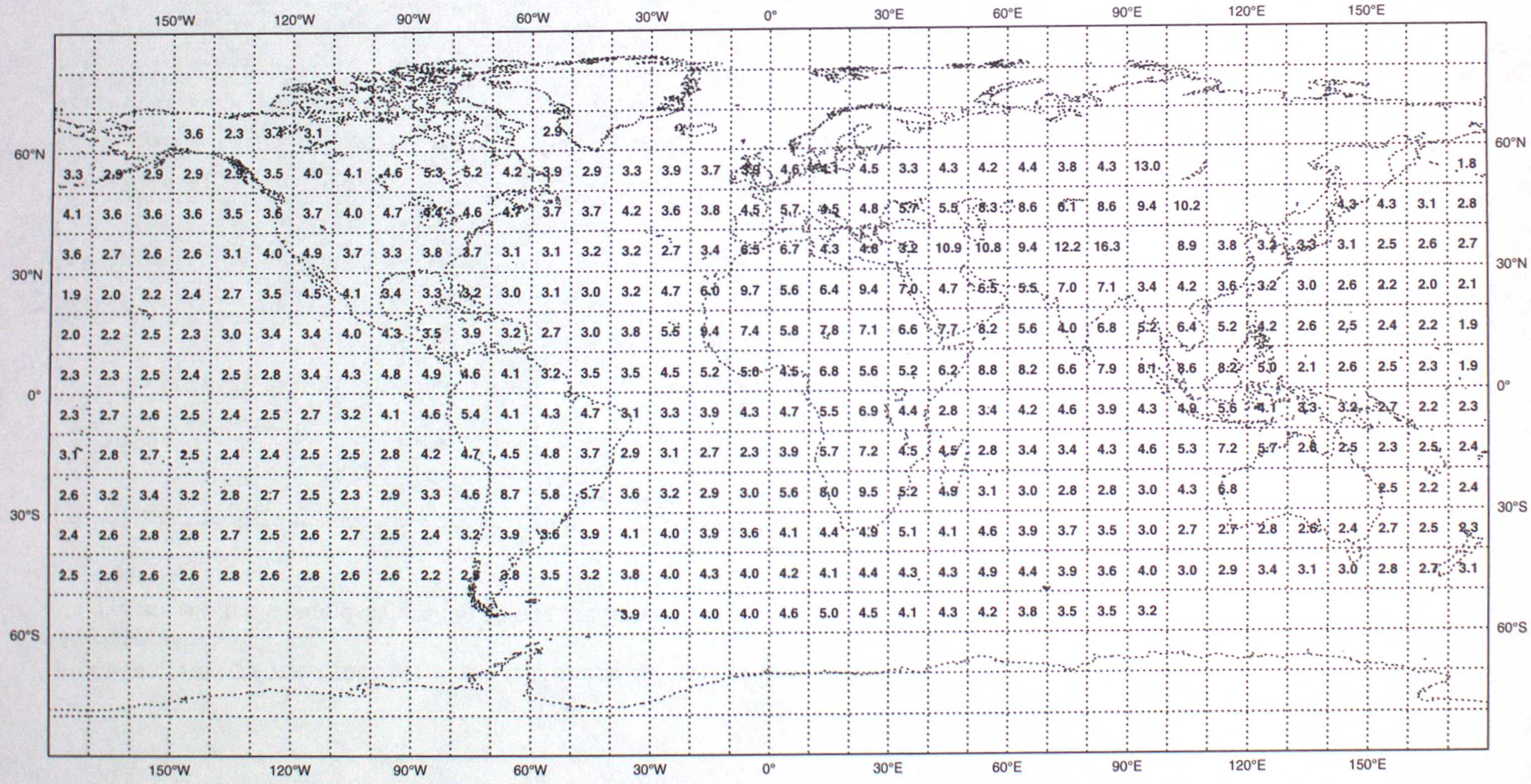

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
3.6 2.3 3.4 3.1 2.9
3.3 2.9 2.9 2.9 2.9 3.5 4.0 4.1 4.6 5.3 5.2 4.2 3.9 2.9 3.3 3.9 3.7 3.9 4.6 4.1 4.5 3.3 4.3 4.2 4.4 3.8 4.3 13.0 1.8
4.1 3.6 3.6 3.6 3.5 3.6 3.7 4.0 4.7 4.4 4.6 4.7 3.7 3.7 4.2 3.6 3.8 4.5 5.7 4.5 4.8 5.7 5.5 8.3 8.6 6.1 8.6 9.4 10.2 4.3 4.3 3.1 2.8
3.6 2.7 2.6 2.6 3.1 4.0 4.9 3.7 3.3 3.8 3.7 3.1 3.1 3.2 3.2 2.7 3.4 6.5 6.7 4.3 4.6 3.2 10.9 10.8 9.4 12.2 16.3 8.9 3.8 3.2 3.3 3.1 2.5 2.6 2.7
1.9 2.0 2.2 2.4 2.7 3.5 4.5 4.1 3.4 3.3 3.2 3.0 3.1 3.0 3.2 4.7 6.0 9.7 5.6 6.4 9.4 7.0 4.7 6.5 5.5 7.0 7.1 3.4 4.2 3.6 3.2 3.0 2.6 2.2 2.0 2.1
2.0 2.2 2.5 2.3 3.0 3.4 3.4 4.0 4.3 3.5 3.9 3.2 2.7 3.0 3.8 5.5 9.4 7.4 5.8 7.8 7.1 6.6 7.7 8.2 5.6 4.0 6.8 5.2 6.4 5.2 4.2 2.6 2.5 2.4 2.2 1.9
2.3 2.3 2.5 2.4 2.5 2.8 3.4 4.3 4.8 4.9 4.6 4.1 3.2 3.5 3.5 4.5 5.2 5.0 4.5 6.8 5.6 5.2 6.2 8.8 8.2 6.6 7.9 8.1 8.6 8.2 5.0 2.1 2.6 2.5 2.3 1.9
2.3 2.7 2.6 2.5 2.4 2.5 2.7 3.2 4.1 4.6 5.4 4.1 4.3 4.7 3.1 3.3 3.9 4.3 4.7 5.5 6.9 4.4 2.8 3.4 4.2 4.6 3.9 4.3 4.9 5.6 4.1 3.3 3.2 2.7 2.2 2.3
3.1 2.8 2.7 2.5 2.4 2.4 2.5 2.5 2.8 4.2 4.7 4.5 4.8 3.7 2.9 3.1 2.7 2.3 3.9 5.7 7.2 4.5 4.5 2.8 3.4 3.4 4.3 4.6 5.3 7.2 5.7 2.8 2.5 2.3 2.5 2.4
2.6 3.2 3.4 3.2 2.8 2.7 2.5 2.3 2.9 3.3 4.6 8.7 5.8 5.7 3.6 3.2 2.9 3.0 5.6 8.0 9.5 5.2 4.9 3.1 3.0 2.8 2.8 3.0 4.3 6.8 2.5 2.2 2.4
2.4 2.6 2.8 2.8 2.7 2.5 2.6 2.7 2.5 2.4 3.2 3.9 3.6 3.9 4.1 4.0 3.9 3.6 4.1 4.4 4.9 5.1 4.1 4.6 3.9 3.7 3.5 3.0 2.7 2.7 2.8 2.6 2.4 2.7 2.5 2.3
2.5 2.6 2.6 2.6 2.8 2.6 2.8 2.6 2.6 2.2 2.8 3.8 3.5 3.2 3.8 4.0 4.3 4.0 4.2 4.1 4.4 4.3 4.3 4.9 4.4 3.9 3.6 4.0 3.0 2.9 3.4 3.1 3.0 2.8 2.7 3.1
3.9 4.0 4.0 4.0 4.6 5.0 4.5 4.1 4.3 4.2 3.8 3.5 3.5 3.2

Figure 15. SATOB 401 - 700 hPa mean daily count. SEPTEMBER 2004
Global average number of observations in 24 hours = 76341

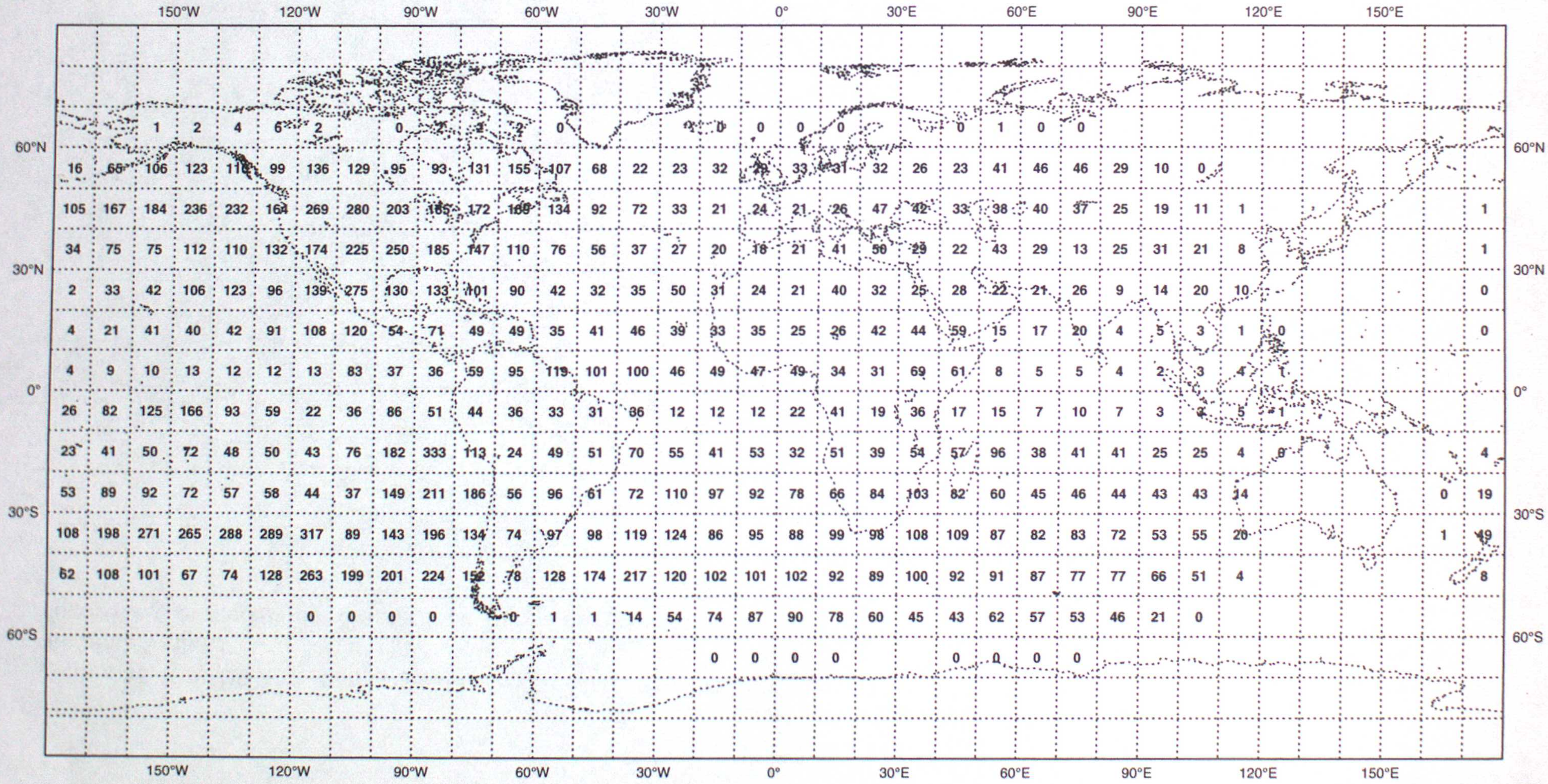

150°W 120°W 90°W 60°W 30°W 0° 30°E 60°E 90°E 120°E 150°E
60°N 30°N 0° 30°S 60°S
1 2 4 6 2 0 2 2 2 0 0 0 0 0 0 1 0 0
16 65 106 123 116 99 136 129 95 93 131 155 107 68 22 23 32 29 33 31 32 26 23 41 46 46 29 10 0
105 167 184 236 232 164 269 280 203 165 172 169 134 92 72 33 21 24 21 26 47 42 33 38 40 37 25 19 11 1 1
34 75 75 112 110 132 174 225 250 185 147 110 76 56 37 27 20 18 21 41 50 29 22 43 29 13 25 31 21 8 1
2 33 42 106 123 96 139 275 130 133 101 90 42 32 35 50 31 24 21 40 32 25 28 22 21 26 9 14 20 10 0
4 21 41 40 42 91 108 120 54 71 49 49 35 41 46 39 33 35 25 26 42 44 59 15 17 20 4 5 3 1 0 0
4 9 10 13 12 12 13 83 37 36 59 95 119 101 100 46 49 47 49 34 31 69 61 8 5 5 4 2 3 4 1
26 82 125 166 93 59 22 36 86 51 44 36 33 31 36 12 12 12 22 41 19 36 17 15 7 10 7 3 3 5 1
23 41 50 72 48 50 43 76 182 333 113 24 49 51 70 55 41 53 32 51 39 54 57 96 38 41 41 25 25 4 8 4
53 89 92 72 57 58 44 37 149 211 186 56 96 61 72 110 97 92 78 66 84 103 82 60 45 46 44 43 43 14 0 19
108 198 271 265 288 289 317 89 143 196 134 74 97 98 119 124 86 95 88 99 98 108 109 87 82 83 72 53 55 20 1 49
62 108 101 67 74 128 263 199 201 224 152 78 128 174 217 120 102 101 102 92 89 100 92 91 87 77 77 66 51 4 8
0 0 0 0 0 1 1 14 54 74 87 90 78 60 45 43 62 57 53 46 21 0
0 0 0 0 0 0 0 0

Figure 16. SATOB 401 - 700 hPa vector mean wind. SEPTEMBER 2004
All observations
Arrows are plotted where greater than 10 obs are present

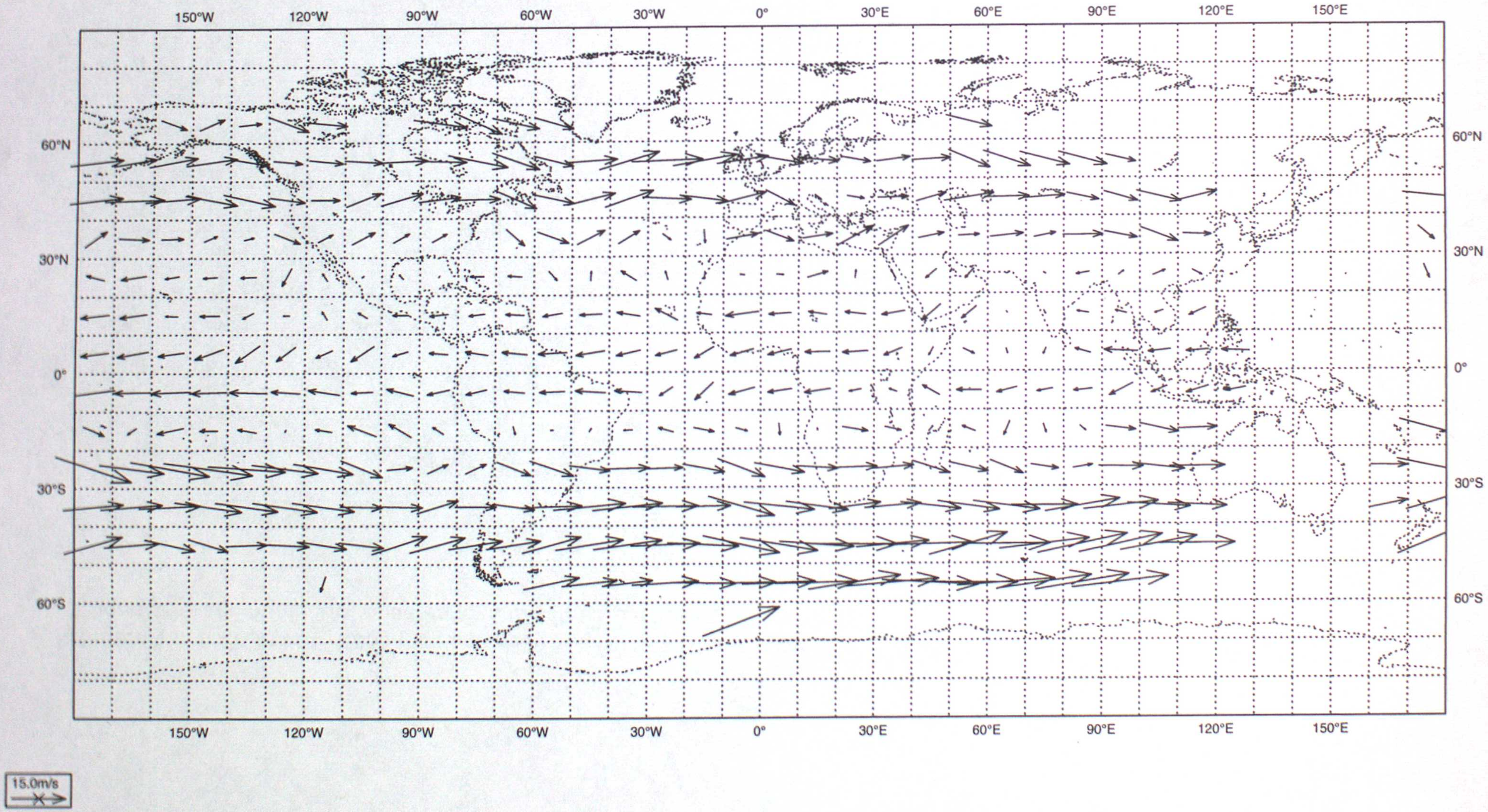

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
15.0m/s

Figure 17. SATOB 401 - 700 hPa mean vector wind differences. SEPTEMBER 2004
All observations
Arrows are plotted where greater than 10 obs are present

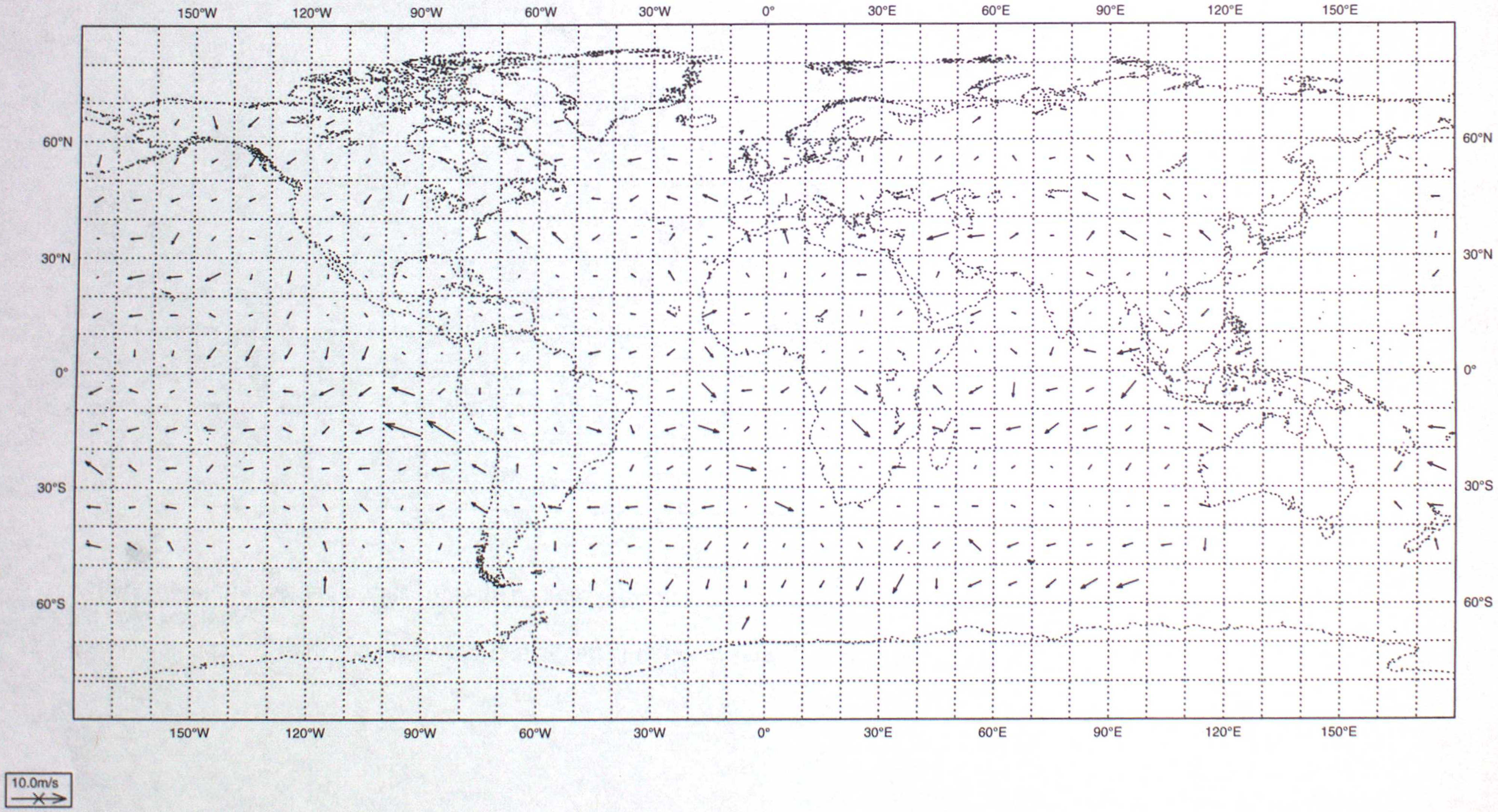

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
10.0m/s

Figure 18. SATOB 401 - 700 hPa mean O-B speed differences (ms-1). SEPTEMBER 2004
All observations
Values are plotted where greater than 10 obs are present

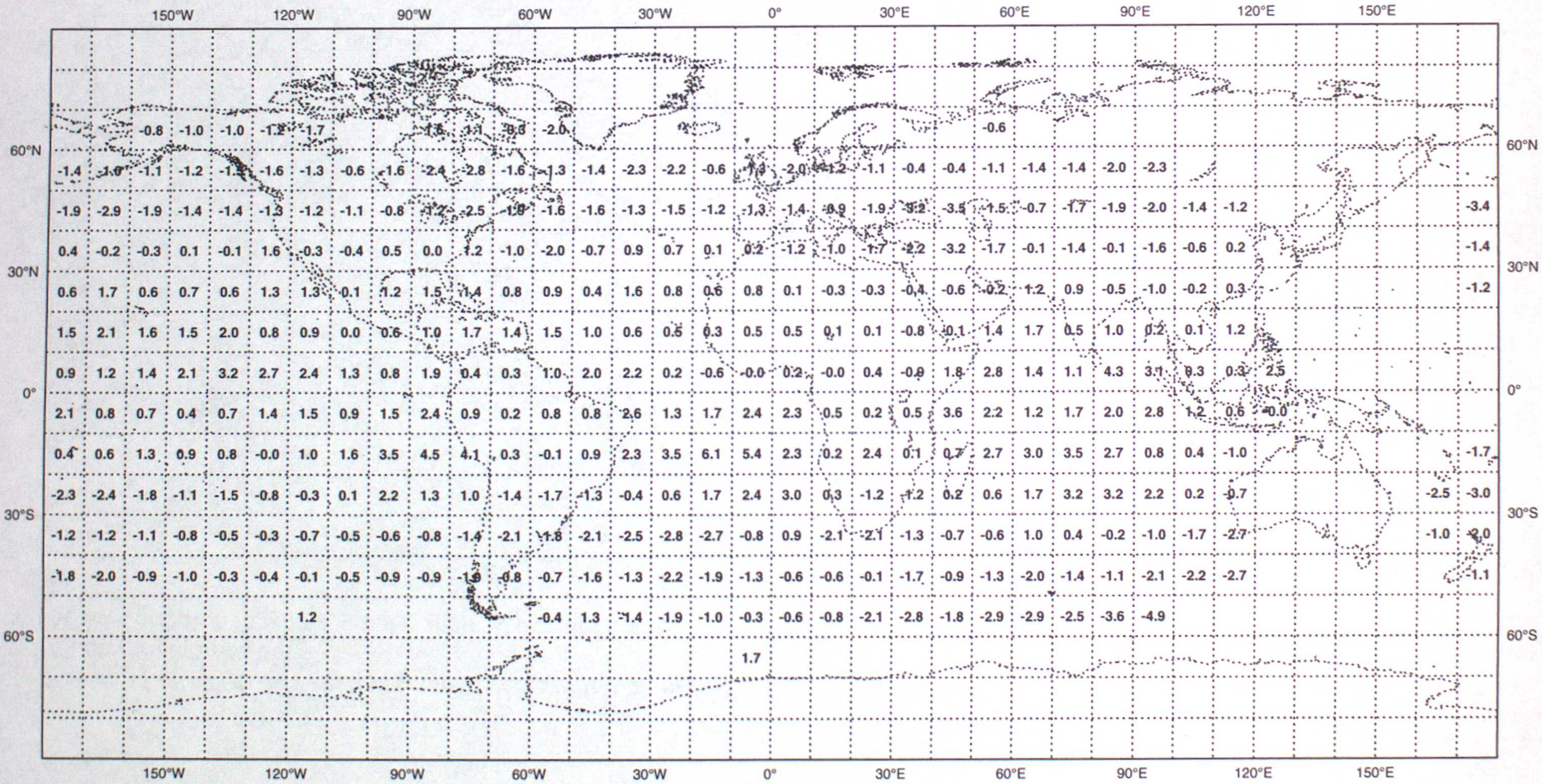

150°W 120°W 90°W 60°W 30°W 0° 30°E 60°E 90°E 120°E 150°E
60°N 30°N 0° 30°S 60°S
-0.8 -1.0 -1.0 -1.2 -1.7 -1.6 -1.1 -0.3 -2.0 -0.6
-1.4 -1.0 -1.1 -1.2 -1.[illegible] -1.6 -1.3 -0.6 -1.6 -2.4 -2.8 -1.6 -1.3 -1.4 -2.3 -2.2 -0.6 -1.3 -2.0 -1.2 -1.1 -0.4 -0.4 -1.1 -1.4 -1.4 -2.0 -2.3
-1.9 -2.9 -1.9 -1.4 -1.4 -1.3 -1.2 -1.1 -0.8 -1.2 -2.5 -1.9 -1.6 -1.6 -1.3 -1.5 -1.2 -1.3 -1.4 -0.9 -1.9 -3.2 -3.5 -1.5 -0.7 -1.7 -1.9 -2.0 -1.4 -1.2 -3.4
0.4 -0.2 -0.3 0.1 -0.1 1.6 -0.3 -0.4 0.5 0.0 1.2 -1.0 -2.0 -0.7 0.9 0.7 0.1 0.2 -1.2 -1.0 -1.7 -2.2 -3.2 -1.7 -0.1 -1.4 -0.1 -1.6 -0.6 0.2 -1.4
0.6 1.7 0.6 0.7 0.6 1.3 1.3 -0.1 1.2 1.5 1.4 0.8 0.9 0.4 1.6 0.8 0.6 0.8 0.1 -0.3 -0.3 -0.4 -0.6 -0.2 1.2 0.9 -0.5 -1.0 -0.2 0.3 -1.2
1.5 2.1 1.6 1.5 2.0 0.8 0.9 0.0 0.6 1.0 1.7 1.4 1.5 1.0 0.6 0.5 0.3 0.5 0.5 0.1 0.1 -0.8 -0.1 1.4 1.7 0.5 1.0 0.2 0.1 1.2
0.9 1.2 1.4 2.1 3.2 2.7 2.4 1.3 0.8 1.9 0.4 0.3 1.0 2.0 2.2 0.2 -0.6 -0.0 0.2 -0.0 0.4 -0.9 1.8 2.8 1.4 1.1 4.3 3.1 0.3 0.3 2.5
2.1 0.8 0.7 0.4 0.7 1.4 1.5 0.9 1.5 2.4 0.9 0.2 0.8 0.8 2.6 1.3 1.7 2.4 2.3 0.5 0.2 0.5 3.6 2.2 1.2 1.7 2.0 2.8 1.2 0.6 -0.0
0.4 0.6 1.3 0.9 0.8 -0.0 1.0 1.6 3.5 4.5 4.1 0.3 -0.1 0.9 2.3 3.5 6.1 5.4 2.3 0.2 2.4 0.1 0.7 2.7 3.0 3.5 2.7 0.8 0.4 -1.0 -1.7
-2.3 -2.4 -1.8 -1.1 -1.5 -0.8 -0.3 0.1 2.2 1.3 1.0 -1.4 -1.7 -1.3 -0.4 0.6 1.7 2.4 3.0 0.3 -1.2 -1.2 0.2 0.6 1.7 3.2 3.2 2.2 0.2 -0.7 -2.5 -3.0
-1.2 -1.2 -1.1 -0.8 -0.5 -0.3 -0.7 -0.5 -0.6 -0.8 -1.4 -2.1 -1.8 -2.1 -2.5 -2.8 -2.7 -0.8 0.9 -2.1 -2.1 -1.3 -0.7 -0.6 1.0 0.4 -0.2 -1.0 -1.7 -2.7 -1.0 -2.0
-1.8 -2.0 -0.9 -1.0 -0.3 -0.4 -0.1 -0.5 -0.9 -0.9 -1.9 -0.8 -0.7 -1.6 -1.3 -2.2 -1.9 -1.3 -0.6 -0.6 -0.1 -1.7 -0.9 -1.3 -2.0 -1.4 -1.1 -2.1 -2.2 -2.7 -1.1
1.2 -0.4 1.3 -1.4 -1.9 -1.0 -0.3 -0.6 -0.8 -2.1 -2.8 -1.8 -2.9 -2.9 -2.5 -3.6 -4.9
1.7

Figure 19. SATOB 401 - 700 hPa mean RMS O-B vector differences (ms-1). SEPTEMBER 2004
All observations
Values are plotted where greater than 10 obs are present

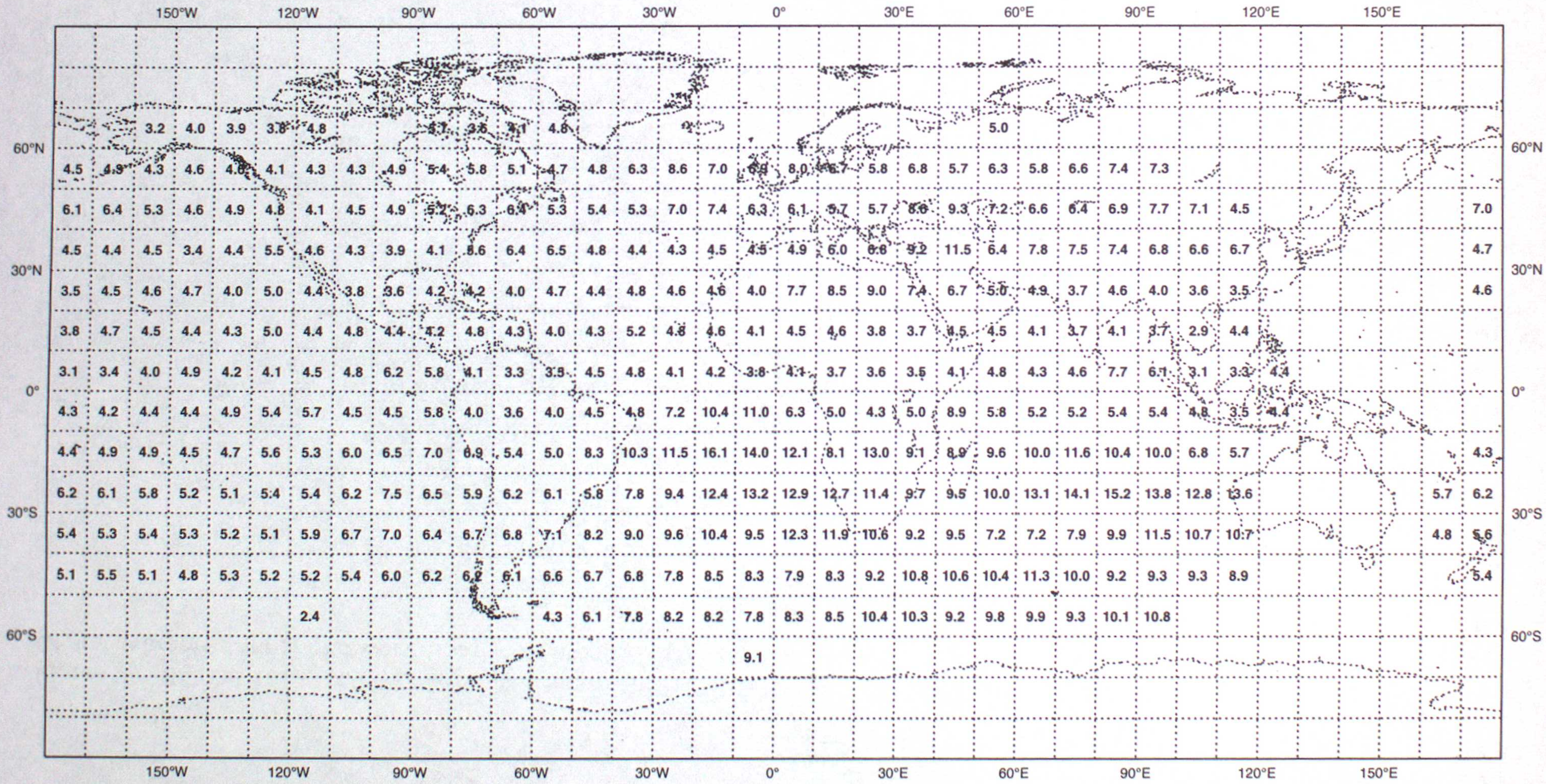

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
3.2 4.0 3.9 3.8 4.8 5.7 3.6 4.1 4.8 5.0
4.5 4.9 4.3 4.6 4.6 4.1 4.3 4.3 4.9 5.4 5.8 5.1 4.7 4.8 6.3 8.6 7.0 6.9 8.0 6.7 5.8 6.8 5.7 6.3 5.8 6.6 7.4 7.3
6.1 6.4 5.3 4.6 4.9 4.8 4.1 4.5 4.9 5.2 6.3 6.4 5.3 5.4 5.3 7.0 7.4 6.3 6.1 5.7 5.7 8.6 9.3 7.2 6.6 6.4 6.9 7.7 7.1 4.5 7.0
4.5 4.4 4.5 3.4 4.4 5.5 4.6 4.3 3.9 4.1 5.6 6.4 6.5 4.8 4.4 4.3 4.5 4.5 4.9 6.0 6.6 9.2 11.5 6.4 7.8 7.5 7.4 6.8 6.6 6.7 4.7
3.5 4.5 4.6 4.7 4.0 5.0 4.4 3.8 3.6 4.2 4.2 4.0 4.7 4.4 4.8 4.6 4.6 4.0 7.7 8.5 9.0 7.4 6.7 5.0 4.9 3.7 4.6 4.0 3.6 3.5 4.6
3.8 4.7 4.5 4.4 4.3 5.0 4.4 4.8 4.4 4.2 4.8 4.3 4.0 4.3 5.2 4.8 4.6 4.1 4.5 4.6 3.8 3.7 4.5 4.5 4.1 3.7 4.1 3.7 2.9 4.4
3.1 3.4 4.0 4.9 4.2 4.1 4.5 4.8 6.2 5.8 4.1 3.3 3.5 4.5 4.8 4.1 4.2 3.8 4.1 3.7 3.6 3.5 4.1 4.8 4.3 4.6 7.7 6.1 3.1 3.3 4.4
4.3 4.2 4.4 4.4 4.9 5.4 5.7 4.5 4.5 5.8 4.0 3.6 4.0 4.5 4.8 7.2 10.4 11.0 6.3 5.0 4.3 5.0 8.9 5.8 5.2 5.2 5.4 5.4 4.8 3.5 4.4
4.4 4.9 4.9 4.5 4.7 5.6 5.3 6.0 6.5 7.0 6.9 5.4 5.0 8.3 10.3 11.5 16.1 14.0 12.1 8.1 13.0 9.1 8.9 9.6 10.0 11.6 10.4 10.0 6.8 5.7 4.3
6.2 6.1 5.8 5.2 5.1 5.4 5.4 6.2 7.5 6.5 5.9 6.2 6.1 5.8 7.8 9.4 12.4 13.2 12.9 12.7 11.4 9.7 9.5 10.0 13.1 14.1 15.2 13.8 12.8 13.6 5.7 6.2
5.4 5.3 5.4 5.3 5.2 5.1 5.9 6.7 7.0 6.4 6.7 6.8 7.1 8.2 9.0 9.6 10.4 9.5 12.3 11.9 10.6 9.2 9.5 7.2 7.2 7.9 9.9 11.5 10.7 10.7 4.8 5.6
5.1 5.5 5.1 4.8 5.3 5.2 5.2 5.4 6.0 6.2 6.2 6.1 6.6 6.7 6.8 7.8 8.5 8.3 7.9 8.3 9.2 10.8 10.6 10.4 11.3 10.0 9.2 9.3 9.3 8.9 5.4
2.4 4.3 6.1 7.8 8.2 8.2 7.8 8.3 8.5 10.4 10.3 9.2 9.8 9.9 9.3 10.1 10.8
9.1

Figure 20. SATOB 101 - 400 hPa mean daily count. SEPTEMBER 2004
Global average number of observations in 24 hours = 232770

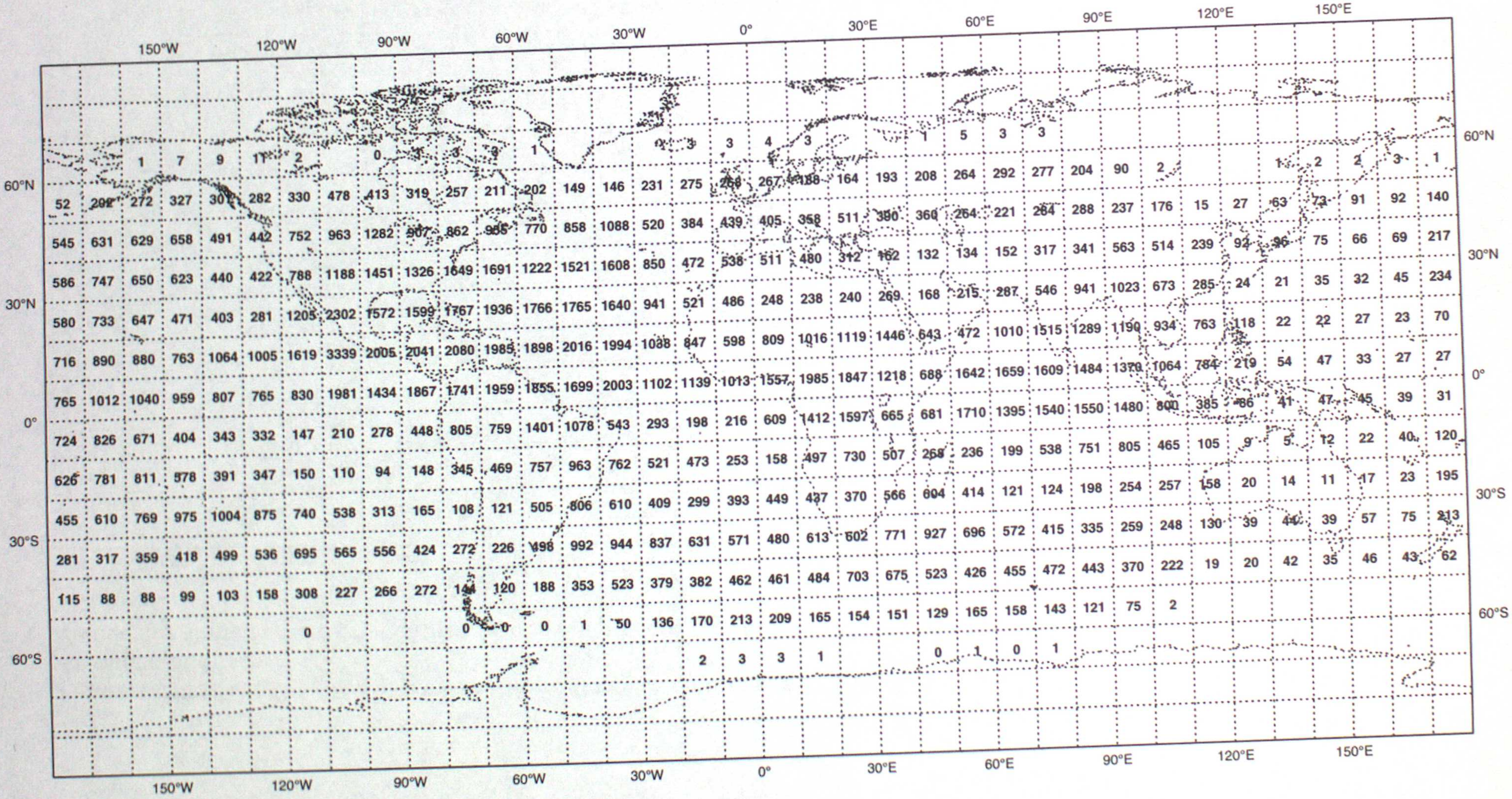

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
1 7 9 11 2 0 3 3 3 1 3 3 4 3 1 5 3 3
52 202 272 327 301 282 330 478 413 319 257 211 202 149 146 231 275 268 267 188 164 193 208 264 292 277 204 90 2 1 2 2 3 1
545 631 629 658 491 442 752 963 1282 907 862 955 770 858 1088 520 384 439 405 358 511 380 360 264 221 264 288 237 176 15 27 63 73 91 92 140
586 747 650 623 440 422 788 1188 1451 1326 1649 1691 1222 1521 1608 850 472 538 511 480 312 162 132 134 152 317 341 563 514 239 92 96 75 66 69 217
580 733 647 471 403 281 1205 2302 1572 1599 1767 1936 1766 1765 1640 941 521 486 248 238 240 269 168 215 287 546 941 1023 673 285 24 21 35 32 45 234
716 890 880 763 1064 1005 1619 3339 2005 2041 2080 1985 1898 2016 1994 1038 847 598 809 1016 1119 1446 643 472 1010 1515 1289 1190 934 763 118 22 22 27 23 70
765 1012 1040 959 807 765 830 1981 1434 1867 1741 1959 1855 1699 2003 1102 1139 1013 1557 1985 1847 1218 688 1642 1659 1609 1484 1370 1064 784 219 54 47 33 27 27
724 826 671 404 343 332 147 210 278 448 805 759 1401 1078 543 293 198 216 609 1412 1597 665 681 1710 1395 1540 1550 1480 800 385 86 41 47 45 39 31
626 781 811 578 391 347 150 110 94 148 345 469 757 963 762 521 473 253 158 497 730 507 268 236 199 538 751 805 465 105 9 5 12 22 40 120
455 610 769 975 1004 875 740 538 313 165 108 121 505 806 610 409 299 393 449 437 370 566 604 414 121 124 198 254 257 158 20 14 11 17 23 195
281 317 359 418 499 536 695 565 556 424 272 226 498 992 944 837 631 571 480 613 602 771 927 696 572 415 335 259 248 130 39 44 39 57 75 213
115 88 88 99 103 158 308 227 266 272 144 120 188 353 523 379 382 462 461 484 703 675 523 426 455 472 443 370 222 19 20 42 35 46 43 62
0 0 0 0 1 50 136 170 213 209 165 154 151 129 165 158 143 121 75 2
2 3 3 1 0 1 0 1

Figure 21. SATOB 101 - 400 hPa vector mean wind. SEPTEMBER 2004
All observations
Arrows are plotted where greater than 10 obs are present

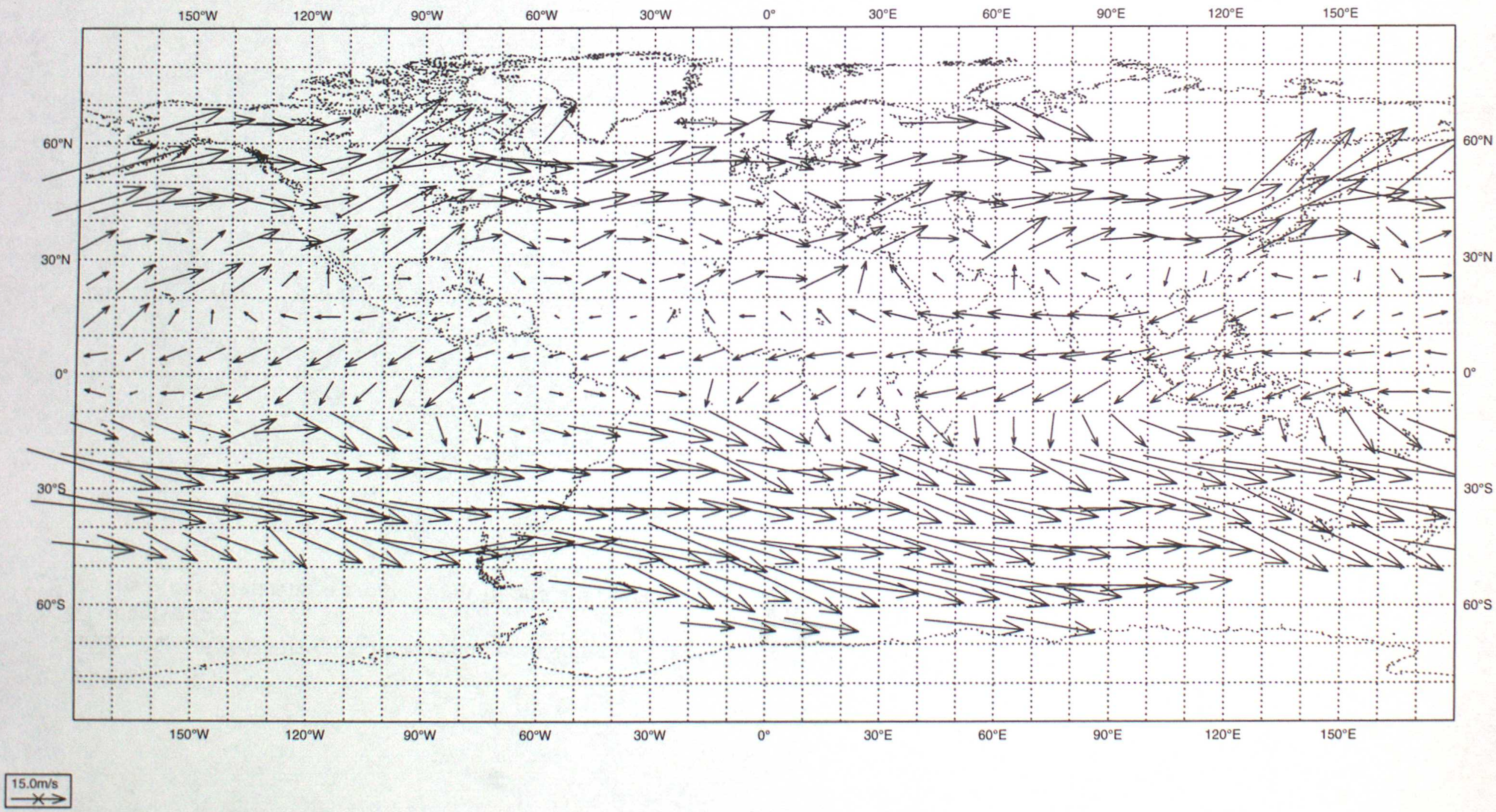

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
15.0m/s

Figure 22. SATOB 101 - 400 hPa mean vector wind differences. SEPTEMBER 2004
All observations
Arrows are plotted where greater than 10 obs are present

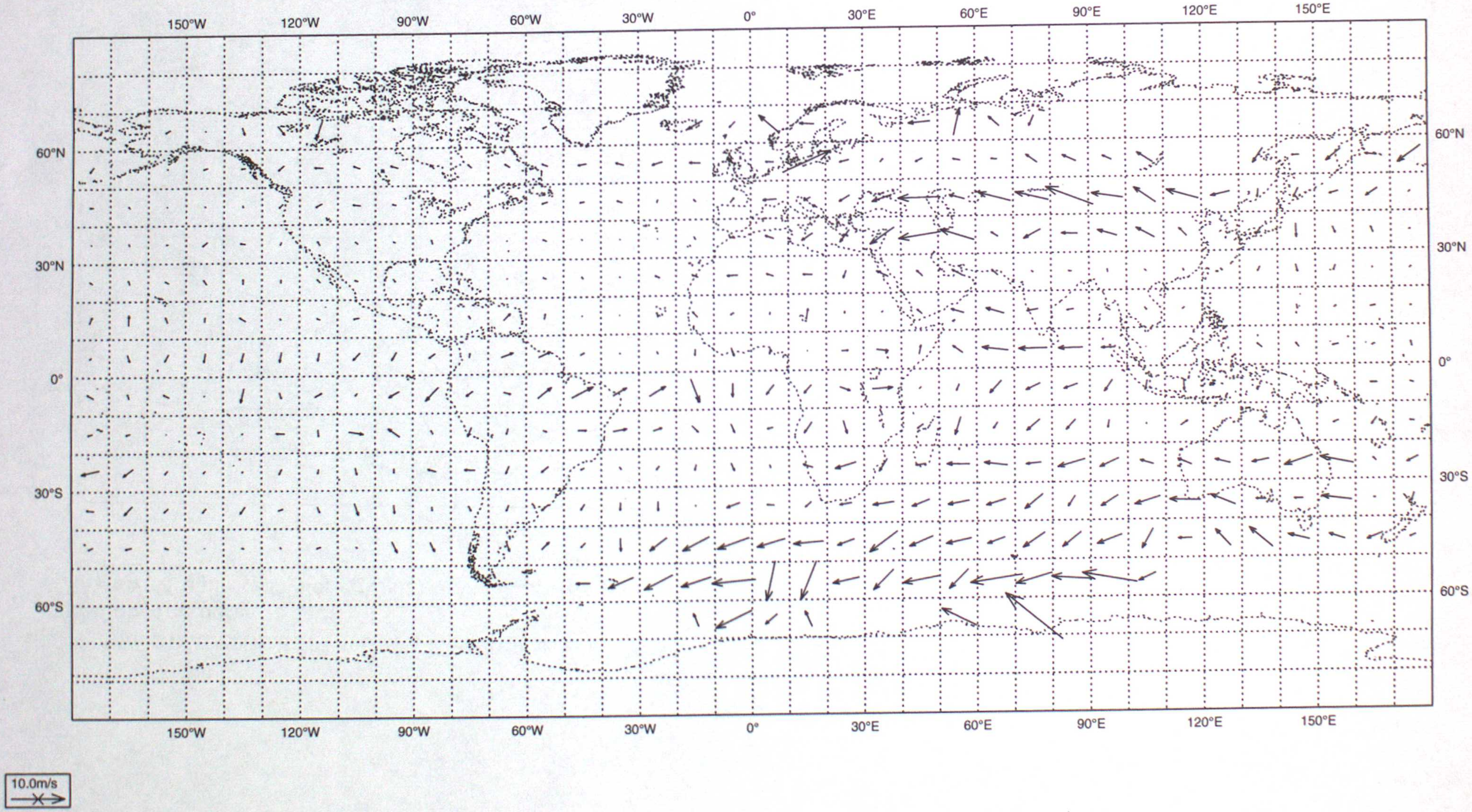

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
10.0m/s

Figure 23. SATOB 101 - 400 hPa mean O-B speed differences (ms-1). SEPTEMBER 2004
All observations
Values are plotted where greater than 10 obs are present

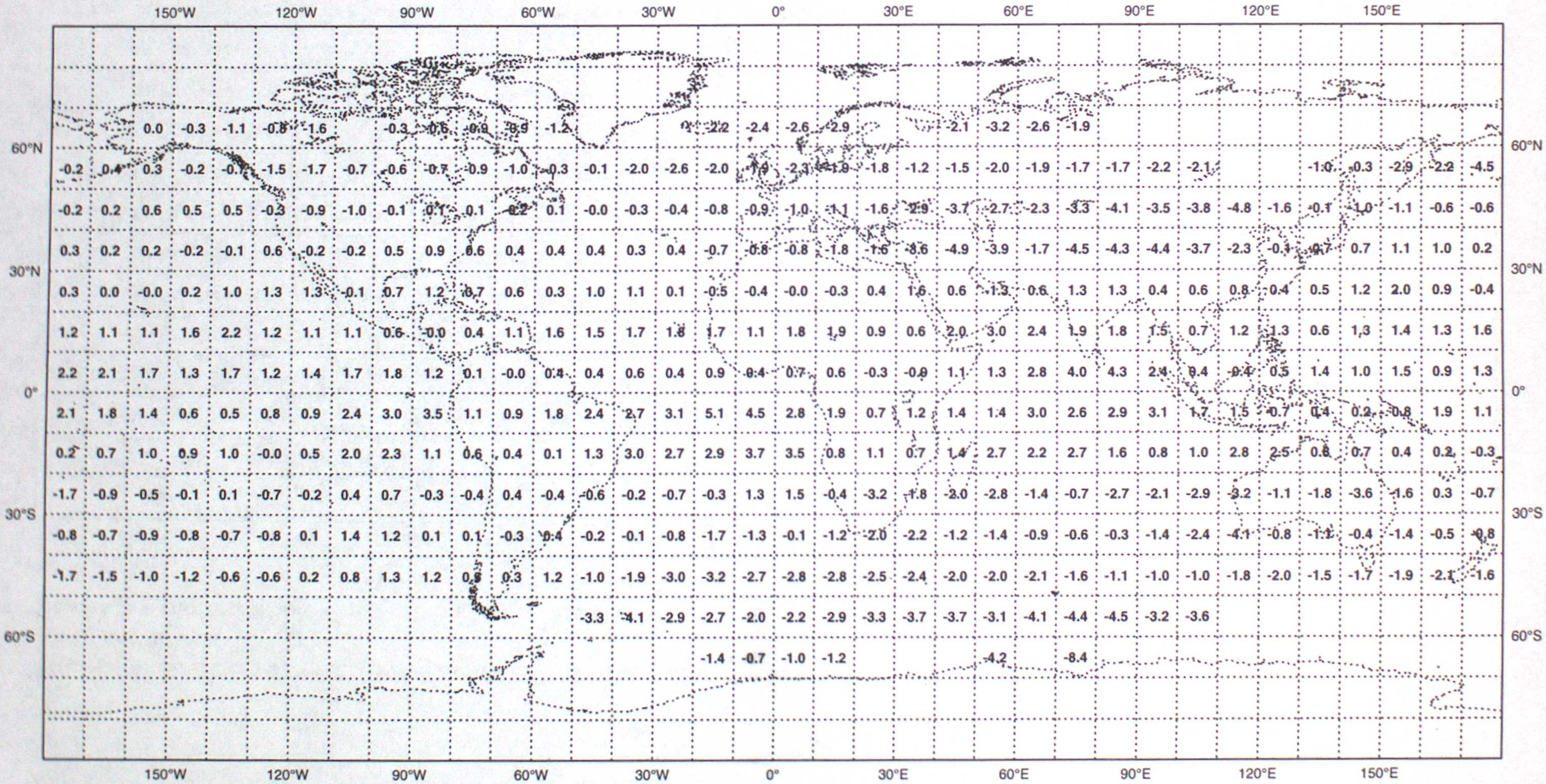
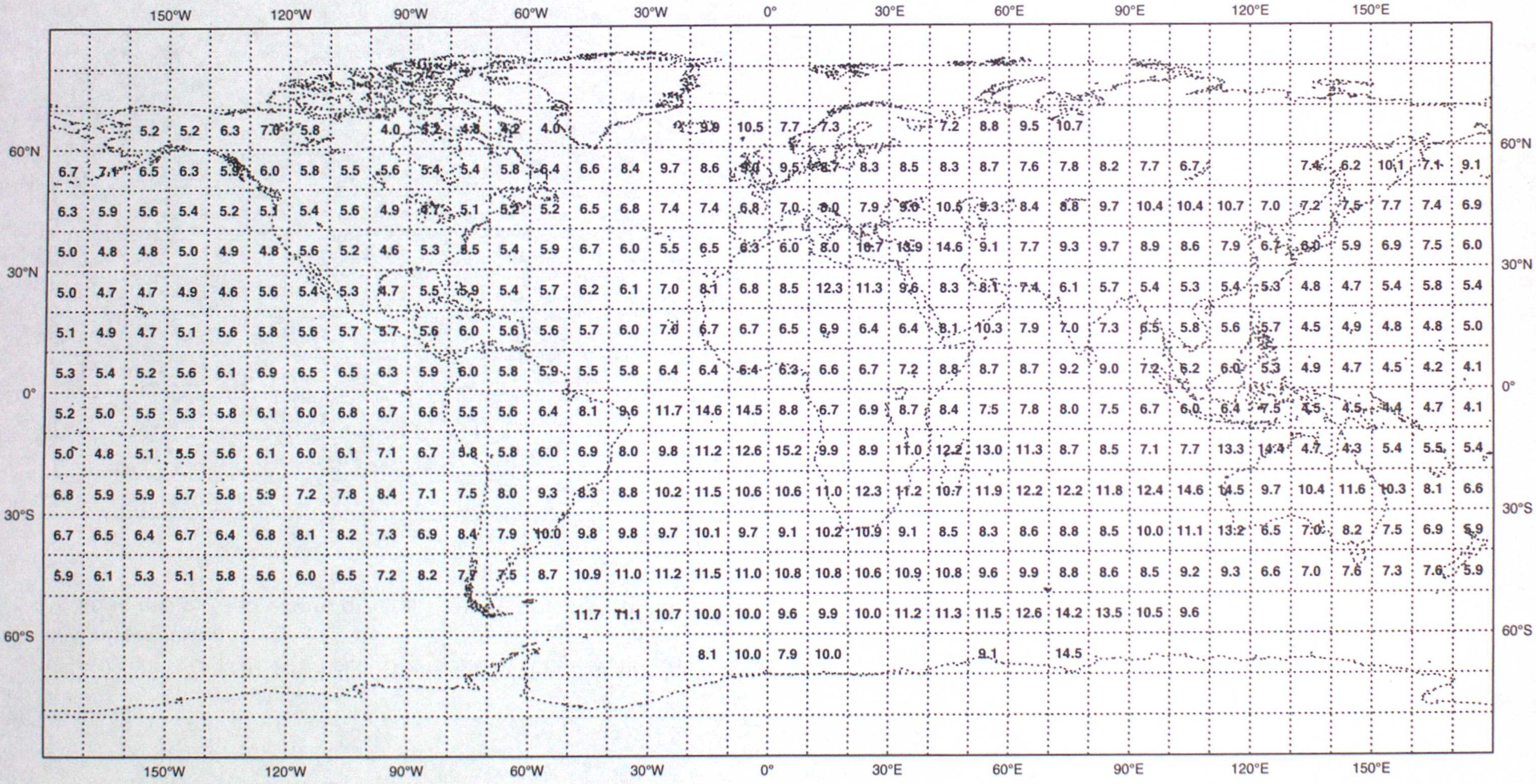

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
0.0 -0.3 -1.1 -0.8 -1.6 -0.3 -0.6 -0.9 0.9 -1.2 -2.2 -2.4 -2.6 -2.9 -2.1 -3.2 -2.6 -1.9
-0.2 0.4 0.3 -0.2 -0.7 -1.5 -1.7 -0.7 -0.6 -0.7 -0.9 -1.0 -0.3 -0.1 -2.0 -2.6 -2.0 -1.9 -2.3 -1.9 -1.8 -1.2 -1.5 -2.0 -1.9 -1.7 -1.7 -2.2 -2.1 -1.0 -0.3 -2.9 -2.2 -4.5
-0.2 0.2 0.6 0.5 0.5 -0.3 -0.9 -1.0 -0.1 0.1 0.1 -0.2 0.1 -0.0 -0.3 -0.4 -0.8 -0.9 -1.0 -1.1 -1.6 -2.9 -3.7 -2.7 -2.3 -3.3 -4.1 -3.5 -3.8 -4.8 -1.6 -0.1 -1.0 -1.1 -0.6 -0.6
0.3 0.2 0.2 -0.2 -0.1 0.6 -0.2 -0.2 0.5 0.9 0.6 0.4 0.4 0.4 0.3 0.4 -0.7 -0.8 -0.8 -1.8 -1.6 -3.6 -4.9 -3.9 -1.7 -4.5 -4.3 -4.4 -3.7 -2.3 -0.1 -0.7 0.7 1.1 1.0 0.2
0.3 0.0 -0.0 0.2 1.0 1.3 1.3 -0.1 0.7 1.2 0.7 0.6 0.3 1.0 1.1 0.1 -0.5 -0.4 -0.0 -0.3 0.4 1.6 0.6 1.3 0.6 1.3 1.3 0.4 0.6 0.8 0.4 0.5 1.2 2.0 0.9 -0.4
1.2 1.1 1.1 1.6 2.2 1.2 1.1 1.1 0.6 -0.0 0.4 1.1 1.6 1.5 1.7 1.8 1.7 1.1 1.8 1.9 0.9 0.6 2.0 3.0 2.4 1.9 1.8 1.5 0.7 1.2 1.3 0.6 1.3 1.4 1.3 1.6
2.2 2.1 1.7 1.3 1.7 1.2 1.4 1.7 1.8 1.2 0.1 -0.0 0.4 0.4 0.6 0.4 0.9 0.4 0.7 0.6 -0.3 -0.9 1.1 1.3 2.8 4.0 4.3 2.4 0.4 0.4 0.5 1.4 1.0 1.5 0.9 1.3
2.1 1.8 1.4 0.6 0.5 0.8 0.9 2.4 3.0 3.5 1.1 0.9 1.8 2.4 2.7 3.1 5.1 4.5 2.8 1.9 0.7 1.2 1.4 1.4 3.0 2.6 2.9 3.1 1.7 1.5 -0.7 0.4 0.2 -0.8 1.9 1.1
0.2 0.7 1.0 0.9 1.0 -0.0 0.5 2.0 2.3 1.1 0.6 0.4 0.1 1.3 3.0 2.7 2.9 3.7 3.5 0.8 1.1 0.7 1.4 2.7 2.2 2.7 1.6 0.8 1.0 2.8 2.5 0.8 0.7 0.4 0.2 -0.3
-1.7 -0.9 -0.5 -0.1 0.1 -0.7 -0.2 0.4 0.7 -0.3 -0.4 0.4 -0.4 -0.6 -0.2 -0.7 -0.3 1.3 1.5 -0.4 -3.2 -1.8 -3.0 -2.8 -1.4 -0.7 -2.7 -2.1 -2.9 -3.2 -1.1 -1.8 -3.6 -1.6 0.3 -0.7
-0.8 -0.7 -0.9 -0.8 -0.7 -0.8 0.1 1.4 1.2 0.1 0.1 -0.3 0.4 -0.2 -0.1 -0.8 -1.7 -1.3 -0.1 -1.2 -2.0 -2.2 -1.2 -1.4 -0.9 -0.6 -0.3 -1.4 -2.4 -4.1 -0.8 -1.1 -0.4 -1.4 -0.5 -0.8
-1.7 -1.5 -1.0 -1.2 -0.6 -0.6 0.2 0.8 1.3 1.2 0.5 0.3 1.2 -1.0 -1.9 -3.0 -3.2 -2.7 -2.8 -2.8 -2.5 -2.4 -2.0 -2.0 -2.1 -1.6 -1.1 -1.0 -1.0 -1.8 -2.0 -1.5 -1.7 -1.9 -2.1 -1.6
-3.3 -4.1 -2.9 -2.7 -2.0 -2.2 -2.9 -3.3 -3.7 -3.7 -3.1 -4.1 -4.4 -4.5 -3.2 -3.6
-1.4 -0.7 -1.0 -1.2 -4.2 -8.4

Figure 24. SATOB 101 - 400 hPa mean RMS O-B vector differences (ms-1). SEPTEMBER 2004
All observations
Values are plotted where greater than 10 obs are present


150°W 120°W 90°W 60°W 30°W 0° 30°E 60°E 90°E 120°E 150°E
60°N 30°N 0° 30°S 60°S
5.2 5.2 6.3 7.0 5.8 4.0 4.2 4.8 4.2 4.0 9.9 10.5 7.7 7.3 7.2 8.8 9.5 10.7
6.7 7.1 6.5 6.3 5.9 6.0 5.8 5.5 5.6 5.4 5.4 5.8 6.4 6.6 8.4 9.7 8.6 9.0 9.5 8.7 8.3 8.5 8.3 8.7 7.6 7.8 8.2 7.7 6.7 7.4 6.2 10.1 7.1 9.1
6.3 5.9 5.6 5.4 5.2 5.1 5.4 5.6 4.9 4.7 5.1 5.2 5.2 6.5 6.8 7.4 7.4 6.8 7.0 8.0 7.9 9.0 10.5 9.3 8.4 8.8 9.7 10.4 10.4 10.7 7.0 7.2 7.5 7.7 7.4 6.9
5.0 4.8 4.8 5.0 4.9 4.8 5.6 5.2 4.6 5.3 5.5 5.4 5.9 6.7 6.0 5.5 6.5 6.3 6.0 8.0 10.7 13.9 14.6 9.1 7.7 9.3 9.7 8.9 8.6 7.9 6.7 6.0 5.9 6.9 7.5 6.0
5.0 4.7 4.7 4.9 4.6 5.6 5.4 5.3 4.7 5.5 5.9 5.4 5.7 6.2 6.1 7.0 8.1 6.8 8.5 12.3 11.3 9.6 8.3 8.1 7.4 6.1 5.7 5.4 5.3 5.4 5.3 4.8 4.7 5.4 5.8 5.4
5.1 4.9 4.7 5.1 5.6 5.8 5.6 5.7 5.7 5.6 6.0 5.6 5.6 5.7 6.0 7.0 6.7 6.7 6.5 6.9 6.4 6.4 8.1 10.3 7.9 7.0 7.3 6.5 5.8 5.6 5.7 4.5 4.9 4.8 4.8 5.0
5.3 5.4 5.2 5.6 6.1 6.9 6.5 6.5 6.3 5.9 6.0 5.8 5.9 5.5 5.8 6.4 6.4 6.4 6.3 6.6 6.7 7.2 8.8 8.7 8.7 9.2 9.0 7.2 6.2 6.0 5.3 4.9 4.7 4.5 4.2 4.1
5.2 5.0 5.5 5.3 5.8 6.1 6.0 6.8 6.7 6.6 5.5 5.6 6.4 8.1 9.6 11.7 14.6 14.5 8.8 6.7 6.9 8.7 8.4 7.5 7.8 8.0 7.5 6.7 6.0 6.4 7.5 4.5 4.5 4.4 4.7 4.1
5.0 4.8 5.1 5.5 5.6 6.1 6.0 6.1 7.1 6.7 5.8 5.8 6.0 6.9 8.0 9.8 11.2 12.6 15.2 9.9 8.9 11.0 12.2 13.0 11.3 8.7 8.5 7.1 7.7 13.3 14.4 4.7 4.3 5.4 5.5 5.4
6.8 5.9 5.9 5.7 5.8 5.9 7.2 7.8 8.4 7.1 7.5 8.0 9.3 8.3 8.8 10.2 11.5 10.6 10.6 11.0 12.3 11.2 10.7 11.9 12.2 12.2 11.8 12.4 14.6 14.5 9.7 10.4 11.6 10.3 8.1 6.6
6.7 6.5 6.4 6.7 6.4 6.8 8.1 8.2 7.3 6.9 8.4 7.9 10.0 9.8 9.8 9.7 10.1 9.7 9.1 10.2 10.9 9.1 8.5 8.3 8.6 8.8 8.5 10.0 11.1 13.2 6.5 7.0 8.2 7.5 6.9 5.9
5.9 6.1 5.3 5.1 5.8 5.6 6.0 6.5 7.2 8.2 7.7 7.5 8.7 10.9 11.0 11.2 11.5 11.0 10.8 10.8 10.6 10.9 10.8 9.6 9.9 8.8 8.6 8.5 9.2 9.3 6.6 7.0 7.6 7.3 7.6 5.9
11.7 11.1 10.7 10.0 10.0 9.6 9.9 10.0 11.2 11.3 11.5 12.6 14.2 13.5 10.5 9.6
8.1 10.0 7.9 10.0 9.1 14.5

MONITORING OF SATELLITE TEMPERATURES

MONITORING CENTRE: EXETER

MONTH: Sep 2004

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from NOAA-15, NOAA-16 and NOAA-17.

Standard of comparison :Background field from UKMO global model.

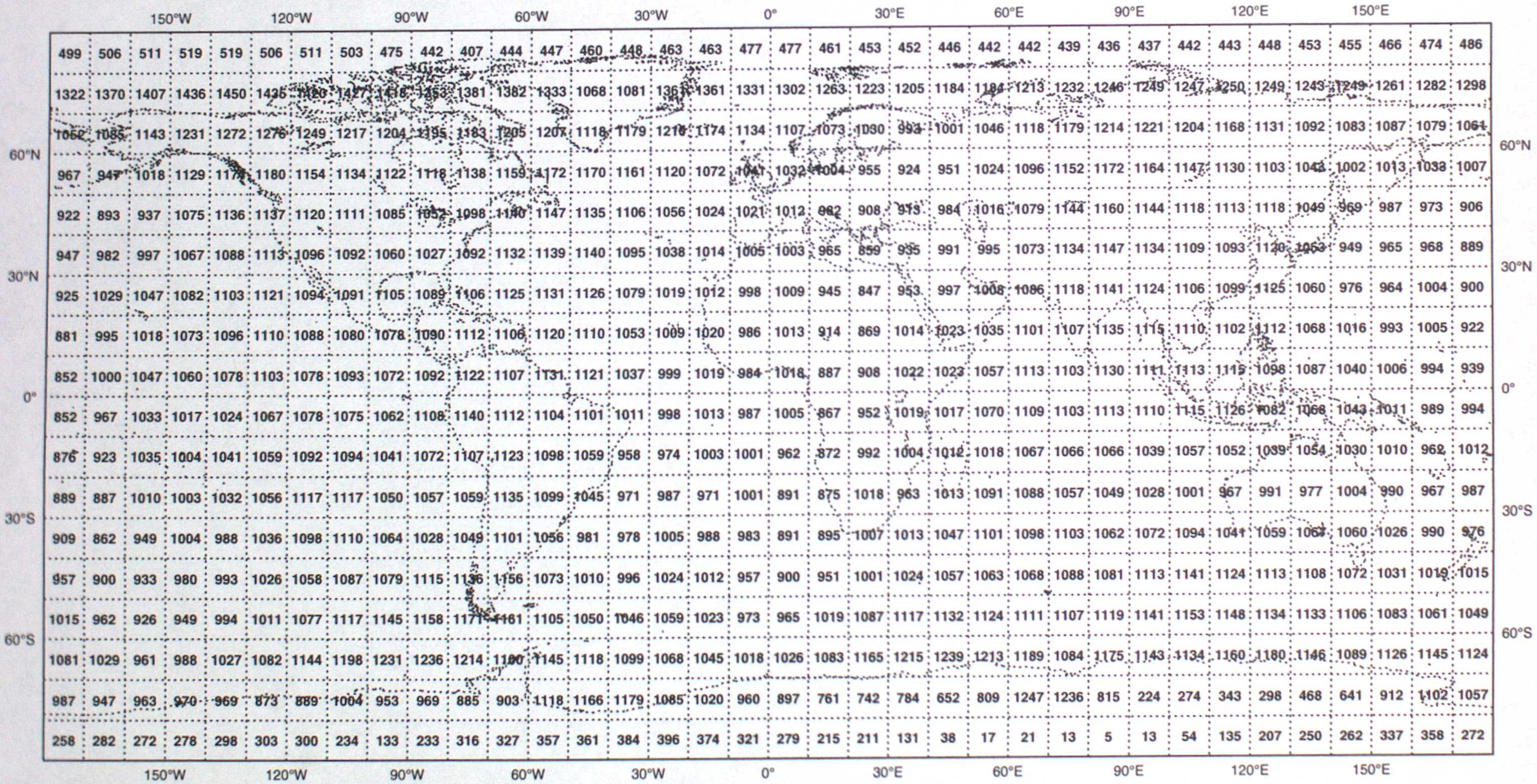
Selection Criteria :All soundings.

Data Extracted :Sounding channels (and approximate weighting function peaks, hPa)

HIRS8 (Surface)
HIRS15 (700)
HIRS11 (500-700)
HIRS4 (400)
AMSUA5 (700)
AMSUA7 (300)
AMSUA9 (100)

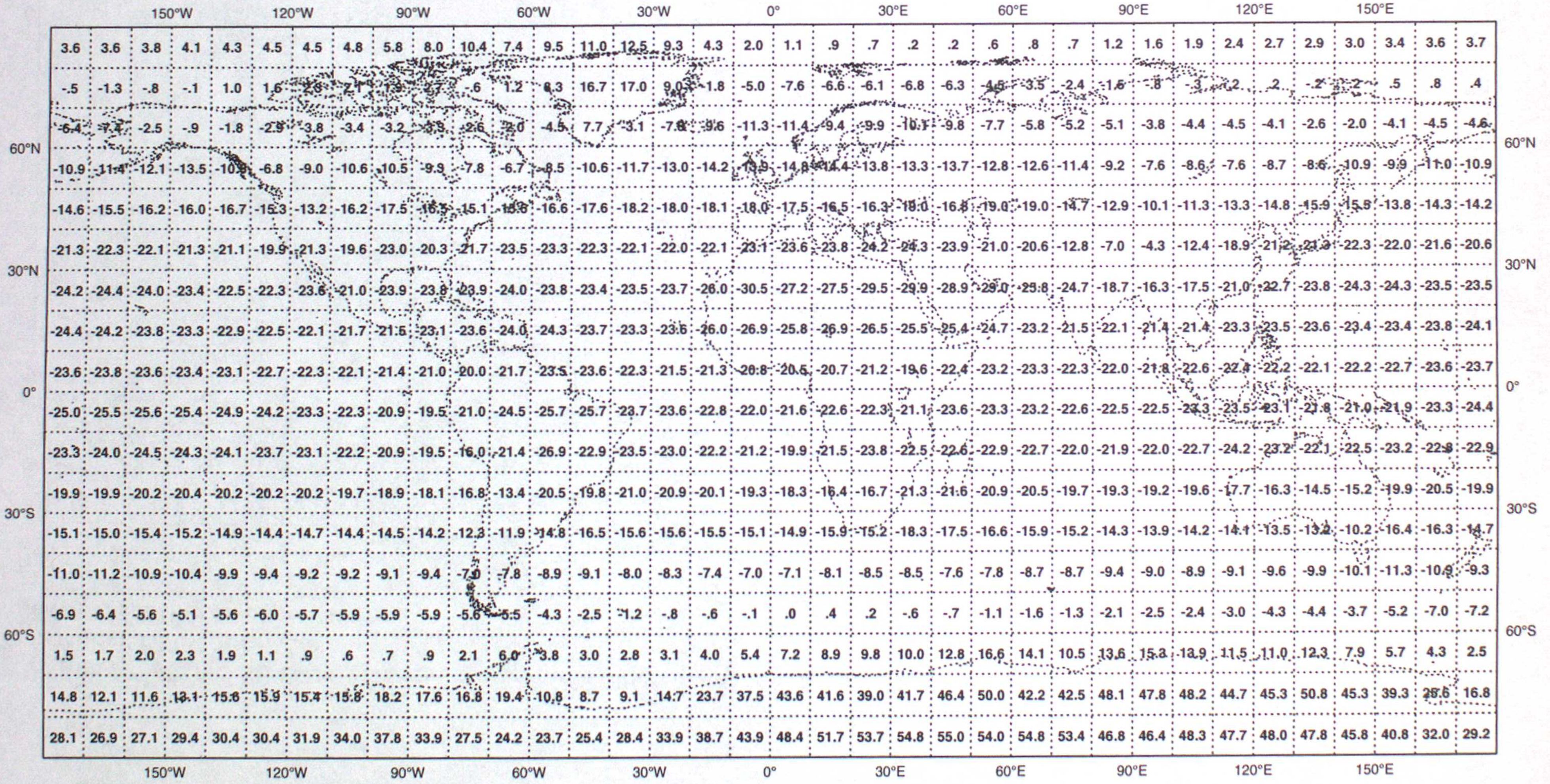
:Mean and standard deviation observation-minus-background brightness temperature differences

Figure 25. ATOVS mean daily count. SEPTEMBER 2004
NOAA15, using all observations
Global average number of observations in 24 hours = 635684



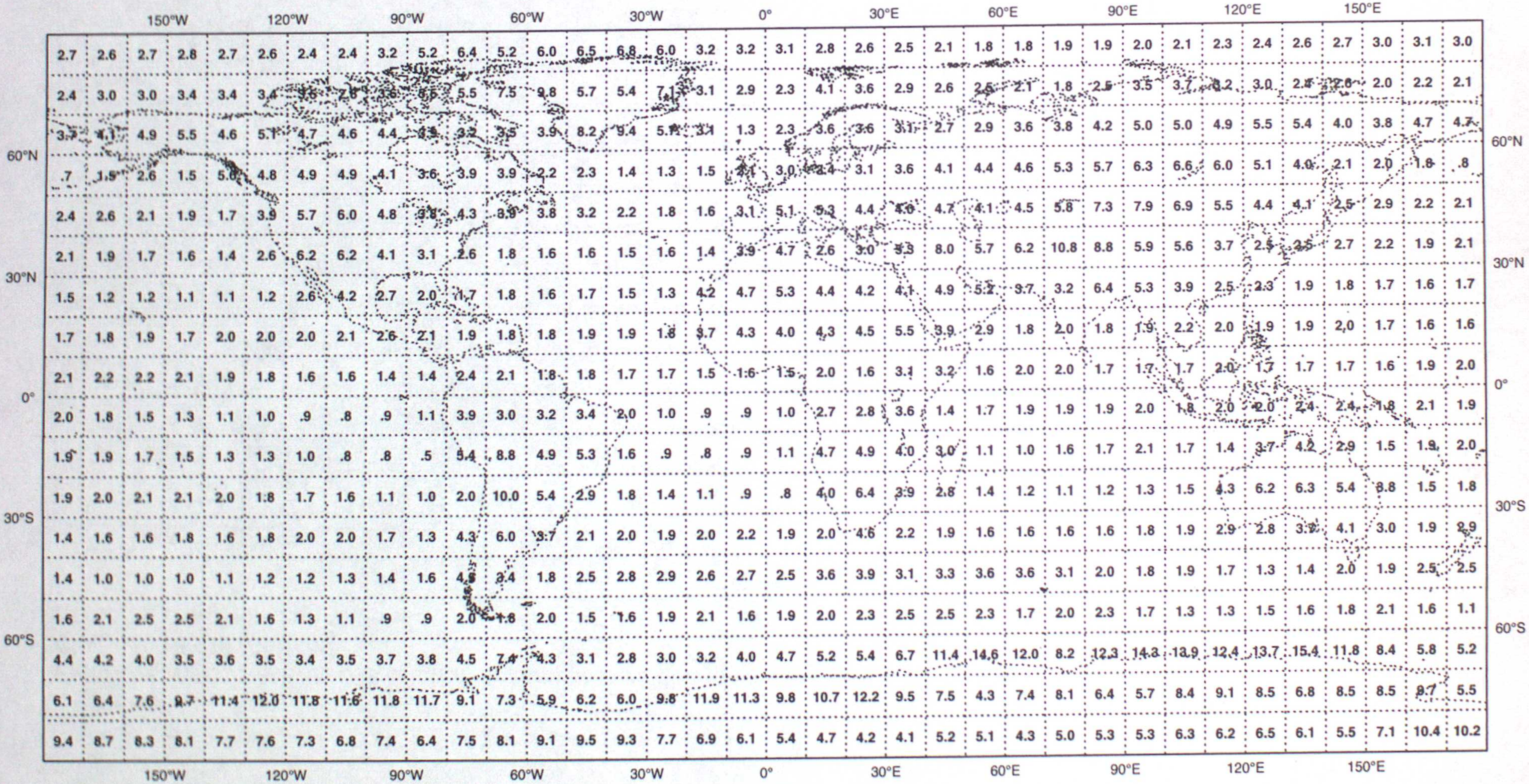
499	506	511	519	519	506	511	503	475	442	407	444	447	460	448	463	463	477	477	461	453	452	446	442	442	439	436	437	442	443	448	453	455	466	474	486
1322	1370	1407	1436	1450	1435	1420	1427	1418	1453	1381	1382	1333	1068	1081	1361	1361	1331	1302	1263	1223	1205	1184	1184	1213	1232	1246	1249	1247	1250	1249	1243	1249	1261	1282	1298
1062	1085	1143	1231	1272	1276	1249	1217	1204	1195	1183	1205	1207	1118	1179	1210	1174	1134	1107	1073	1030	993	1001	1046	1118	1179	1214	1221	1204	1168	1131	1092	1083	1087	1079	1061
967	947	1018	1129	1178	1180	1154	1134	1122	1118	1138	1159	1172	1170	1161	1120	1072	1041	1032	1004	955	924	951	1024	1096	1152	1172	1164	1147	1130	1103	1043	1002	1013	1038	1007
922	893	937	1075	1136	1137	1120	1111	1085	1052	1098	1140	1147	1135	1106	1056	1024	1021	1012	982	908	913	984	1016	1079	1144	1160	1144	1118	1113	1118	1049	969	987	973	906
947	982	997	1067	1088	1113	1096	1092	1060	1027	1092	1132	1139	1140	1095	1038	1014	1005	1003	965	859	935	991	995	1073	1134	1147	1134	1109	1093	1120	1053	949	965	968	889
925	1029	1047	1082	1103	1121	1094	1091	1105	1089	1106	1125	1131	1126	1079	1019	1012	998	1009	945	847	953	997	1008	1086	1118	1141	1124	1106	1099	1125	1060	976	964	1004	900
881	995	1018	1073	1096	1110	1088	1080	1078	1090	1112	1106	1120	1110	1053	1009	1020	986	1013	914	869	1014	1023	1035	1101	1107	1135	1115	1110	1102	1112	1068	1016	993	1005	922
852	1000	1047	1060	1078	1103	1078	1093	1072	1092	1122	1107	1131	1121	1037	999	1019	984	1018	887	908	1022	1023	1057	1113	1103	1130	1111	1113	1115	1098	1087	1040	1006	994	939
852	967	1033	1017	1024	1067	1078	1075	1062	1108	1140	1112	1104	1101	1011	998	1013	987	1005	867	952	1019	1017	1070	1109	1103	1113	1110	1115	1126	1082	1068	1043	1011	989	994
876	923	1035	1004	1041	1059	1092	1094	1041	1072	1107	1123	1098	1059	958	974	1003	1001	962	872	992	1004	1012	1018	1067	1066	1066	1039	1057	1052	1039	1054	1030	1010	962	1012
889	887	1010	1003	1032	1056	1117	1117	1050	1057	1059	1135	1099	1045	971	987	971	1001	891	875	1018	963	1013	1091	1088	1057	1049	1028	1001	967	991	977	1004	990	967	987
909	862	949	1004	988	1036	1098	1110	1064	1028	1049	1101	1056	981	978	1005	988	983	891	895	1007	1013	1047	1101	1098	1103	1062	1072	1094	1041	1059	1067	1060	1026	990	976
957	900	933	980	993	1026	1058	1087	1079	1115	1136	1156	1073	1010	996	1024	1012	957	900	951	1001	1024	1057	1063	1068	1088	1081	1113	1141	1124	1113	1108	1072	1031	1019	1015
1015	962	926	949	994	1011	1077	1117	1145	1158	1171	1161	1105	1050	1046	1059	1023	973	965	1019	1087	1117	1132	1124	1111	1107	1119	1141	1153	1148	1134	1133	1106	1083	1061	1049
1081	1029	961	988	1027	1082	1144	1198	1231	1236	1214	1180	1145	1118	1099	1068	1045	1018	1026	1083	1165	1215	1239	1213	1189	1084	1175	1143	1134	1160	1180	1146	1089	1126	1145	1124
987	947	963	970	969	873	889	1004	953	969	885	903	1118	1166	1179	1085	1020	960	897	761	742	784	652	809	1247	1236	815	224	274	343	298	468	641	912	1102	1057
258	282	272	278	298	303	300	234	133	233	316	327	357	361	384	396	374	321	279	215	211	131	38	17	21	13	5	13	54	135	207	250	262	337	358	272

Figure 26. ATOVS MEAN O-B brightness temperature differences (deg C). SEPTEMBER 2004
Channel: HIRS8 (Surface)
NOAA15, using all observations



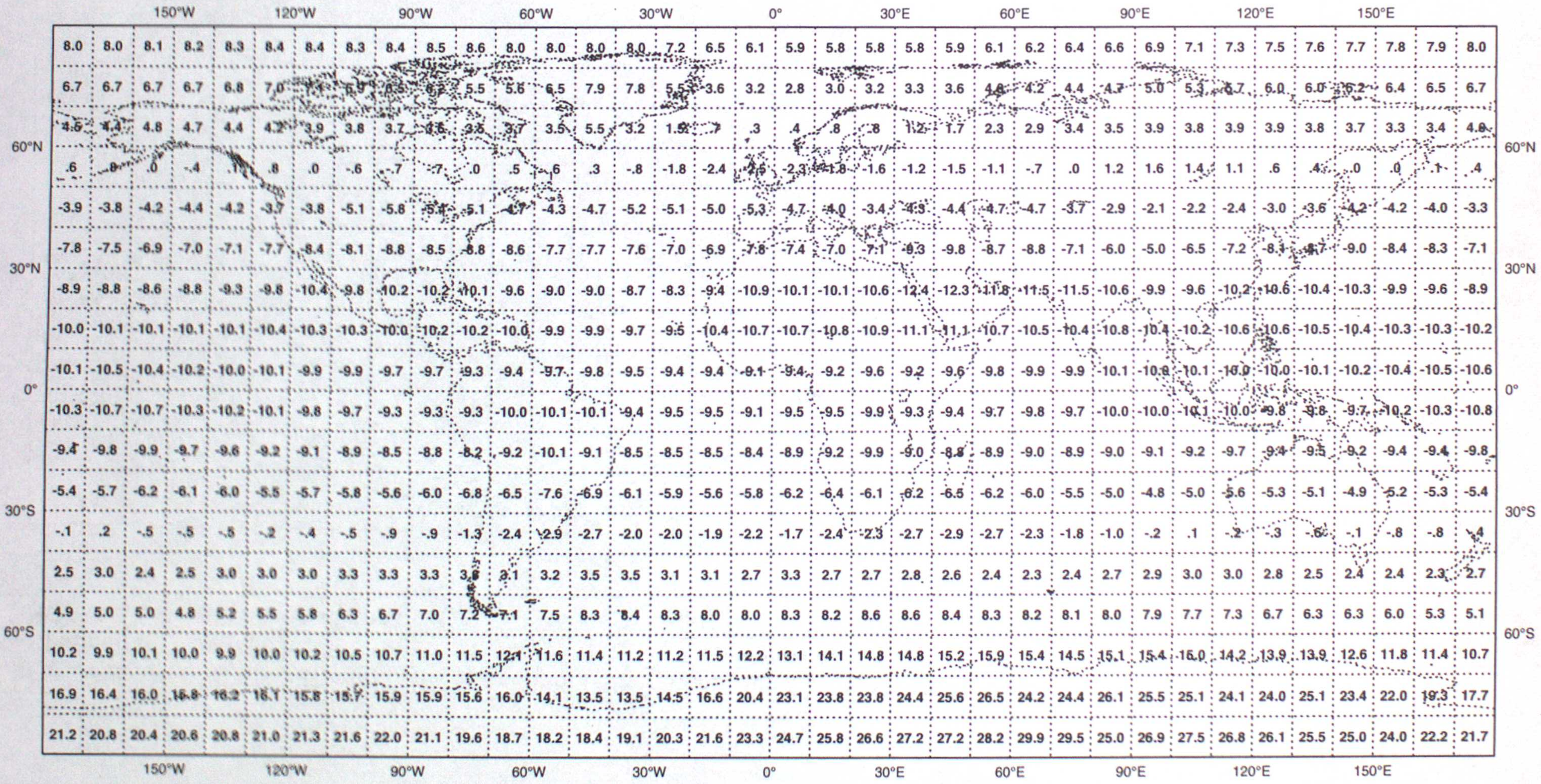
3.6	3.6	3.8	4.1	4.3	4.5	4.5	4.8	5.8	8.0	10.4	7.4	9.5	11.0	12.5	9.3	4.3	2.0	1.1	.9	.7	.2	.2	.6	.8	.7	1.2	1.6	1.9	2.4	2.7	2.9	3.0	3.4	3.6	3.7
-.5	-1.3	-.8	-.1	1.0	1.6	2.8	2.1	1.9	2.7	-.6	1.2	8.3	16.7	17.0	9.0	-1.8	-5.0	-7.6	-6.6	-6.1	-6.8	-6.3	-4.5	-3.5	-2.4	-1.6	-.8	-.3	.2	.2	-.2	-.2	.5	.8	.4
-6.4	-7.4	-2.5	-.9	-1.8	-2.9	-3.8	-3.4	-3.2	-3.3	-2.6	-2.0	-4.5	7.7	-3.1	-7.8	-9.6	-11.3	-11.4	-9.4	-9.9	-10.1	-9.8	-7.7	-5.8	-5.2	-5.1	-3.8	-4.4	-4.5	-4.1	-2.6	-2.0	-4.1	-4.5	-4.6
-10.9	-11.4	-12.1	-13.5	-10.8	-6.8	-9.0	-10.6	-10.5	-9.9	-7.8	-6.7	-8.5	-10.6	-11.7	-13.0	-14.2	-13.9	-14.8	-14.4	-13.8	-13.3	-13.7	-12.8	-12.6	-11.4	-9.2	-7.6	-8.6	-7.6	-8.7	-8.6	-10.9	-9.9	-11.0	-10.9
-14.6	-15.5	-16.2	-16.0	-16.7	-15.3	-13.2	-16.2	-17.5	-16.5	-15.1	-15.6	-16.6	-17.6	-18.2	-18.0	-18.1	-18.0	-17.5	-16.5	-16.3	-18.0	-16.8	-19.0	-19.0	-14.7	-12.9	-10.1	-11.3	-13.3	-14.8	-15.9	-15.8	-13.8	-14.3	-14.2
-21.3	-22.3	-22.1	-21.3	-21.1	-19.9	-21.3	-19.6	-23.0	-20.3	-21.7	-23.5	-23.3	-22.3	-22.1	-22.0	-22.1	-23.1	-23.6	-23.8	-24.2	-24.3	-23.9	-21.0	-20.6	-12.8	-7.0	-4.3	-12.4	-18.9	-21.2	-21.3	-22.3	-22.0	-21.6	-20.6
-24.2	-24.4	-24.0	-23.4	-22.5	-22.3	-23.6	-21.0	-23.9	-23.8	-23.9	-24.0	-23.8	-23.4	-23.5	-23.7	-26.0	-30.5	-27.2	-27.5	-29.5	-29.9	-28.9	-29.0	-25.8	-24.7	-18.7	-16.3	-17.5	-21.0	-22.7	-23.8	-24.3	-24.3	-23.5	-23.5
-24.4	-24.2	-23.8	-23.3	-22.9	-22.5	-22.1	-21.7	-21.5	-23.1	-23.6	-24.0	-24.3	-23.7	-23.3	-23.6	-26.0	-26.9	-25.8	-26.9	-26.5	-25.5	-25.4	-24.7	-23.2	-21.5	-22.1	-21.4	-21.4	-23.3	-23.5	-23.6	-23.4	-23.4	-23.8	-24.1
-23.6	-23.8	-23.6	-23.4	-23.1	-22.7	-22.3	-22.1	-21.4	-21.0	-20.0	-21.7	-23.5	-23.6	-22.3	-21.5	-21.3	-20.8	-20.5	-20.7	-21.2	-19.6	-22.4	-23.2	-23.3	-22.3	-22.0	-21.8	-22.6	-22.4	-22.2	-22.1	-22.2	-22.7	-23.6	-23.7
-25.0	-25.5	-25.6	-25.4	-24.9	-24.2	-23.3	-22.3	-20.9	-19.5	-21.0	-24.5	-25.7	-25.7	-23.7	-23.6	-22.8	-22.0	-21.6	-22.6	-22.3	-21.1	-23.6	-23.3	-23.2	-22.6	-22.5	-22.5	-23.3	-23.5	-23.1	-21.8	-21.0	-21.9	-23.3	-24.4
-23.3	-24.0	-24.5	-24.3	-24.1	-23.7	-23.1	-22.2	-20.9	-19.5	-16.0	-21.4	-26.9	-22.9	-23.5	-23.0	-22.2	-21.2	-19.9	-21.5	-23.8	-22.5	-22.6	-22.9	-22.7	-22.0	-21.9	-22.0	-22.7	-24.2	-23.2	-22.1	-22.5	-23.2	-22.8	-22.9
-19.9	-19.9	-20.2	-20.4	-20.2	-20.2	-20.2	-19.7	-18.9	-18.1	-16.8	-13.4	-20.5	-19.8	-21.0	-20.9	-20.1	-19.3	-18.3	-16.4	-16.7	-21.3	-21.6	-20.9	-20.5	-19.7	-19.3	-19.2	-19.6	-17.7	-16.3	-14.5	-15.2	-19.9	-20.5	-19.9
-15.1	-15.0	-15.4	-15.2	-14.9	-14.4	-14.7	-14.4	-14.5	-14.2	-12.3	-11.9	-14.8	-16.5	-15.6	-15.6	-15.5	-15.1	-14.9	-15.9	-15.2	-18.3	-17.5	-16.6	-15.9	-15.2	-14.3	-13.9	-14.2	-14.1	-13.5	-13.2	-10.2	-16.4	-16.3	-14.7
-11.0	-11.2	-10.9	-10.4	-9.9	-9.4	-9.2	-9.2	-9.1	-9.4	-7.0	-7.8	-8.9	-9.1	-8.0	-8.3	-7.4	-7.0	-7.1	-8.1	-8.5	-8.5	-7.6	-7.8	-8.7	-8.7	-9.4	-9.0	-8.9	-9.1	-9.6	-9.9	-10.1	-11.3	-10.9	-9.3
-6.9	-6.4	-5.6	-5.1	-5.6	-6.0	-5.7	-5.9	-5.9	-5.9	-5.6	-5.5	-4.3	-2.5	-1.2	-.8	-.6	-.1	.0	.4	.2	-.6	-.7	-1.1	-1.6	-1.3	-2.1	-2.5	-2.4	-3.0	-4.3	-4.4	-3.7	-5.2	-7.0	-7.2
1.5	1.7	2.0	2.3	1.9	1.1	.9	.6	.7	.9	2.1	6.0	3.8	3.0	2.8	3.1	4.0	5.4	7.2	8.9	9.8	10.0	12.8	16.6	14.1	10.5	13.6	15.3	13.9	11.5	11.0	12.3	7.9	5.7	4.3	2.5
14.8	12.1	11.6	13.1	15.6	15.9	15.4	15.8	18.2	17.6	16.8	19.4	10.8	8.7	9.1	14.7	23.7	37.5	43.6	41.6	39.0	41.7	46.4	50.0	42.2	42.5	48.1	47.8	48.2	44.7	45.3	50.8	45.3	39.3	26.6	16.8
28.1	26.9	27.1	29.4	30.4	30.4	31.9	34.0	37.8	33.9	27.5	24.2	23.7	25.4	28.4	33.9	38.7	43.9	48.4	51.7	53.7	54.8	55.0	54.0	54.8	53.4	46.8	46.4	48.3	47.7	48.0	47.8	45.8	40.8	32.0	29.2

Figure 27. ATOVS SD O-B brightness temperature differences (deg C). SEPTEMBER 2004
Channel: HIRS8 (Surface)
NOAA15, using all observations



2.7	2.6	2.7	2.8	2.7	2.6	2.4	2.4	3.2	5.2	6.4	5.2	6.0	6.5	6.8	6.0	3.2	3.2	3.1	2.8	2.6	2.5	2.1	1.8	1.8	1.9	1.9	2.0	2.1	2.3	2.4	2.6	2.7	3.0	3.1	3.0
2.4	3.0	3.0	3.4	3.4	3.4	3.6	2.8	3.6	6.5	5.5	7.5	9.8	5.7	5.4	7.1	3.1	2.9	2.3	4.1	3.6	2.9	2.6	2.5	2.1	1.8	2.5	3.5	3.7	3.2	3.0	2.4	2.6	2.0	2.2	2.1
3.7	4.1	4.9	5.5	4.6	5.1	4.7	4.6	4.4	4.3	3.2	3.5	3.9	8.2	9.4	5.1	3.1	1.3	2.3	3.6	3.6	3.1	2.7	2.9	3.6	3.8	4.2	5.0	5.0	4.9	5.5	5.4	4.0	3.8	4.7	4.7
.7	1.5	2.6	1.5	5.6	4.8	4.9	4.9	4.1	3.6	3.9	3.9	2.2	2.3	1.4	1.3	1.5	2.1	3.0	2.4	3.1	3.6	4.1	4.4	4.6	5.3	5.7	6.3	6.6	6.0	5.1	4.0	2.1	2.0	1.8	.8
2.4	2.6	2.1	1.9	1.7	3.9	5.7	6.0	4.8	3.8	4.3	3.9	3.8	3.2	2.2	1.8	1.6	3.1	5.1	5.3	4.4	4.0	4.7	4.1	4.5	5.8	7.3	7.9	6.9	5.5	4.4	4.1	2.5	2.9	2.2	2.1
2.1	1.9	1.7	1.6	1.4	2.6	6.2	6.2	4.1	3.1	2.6	1.8	1.6	1.6	1.5	1.6	1.4	3.9	4.7	2.6	3.0	3.3	8.0	5.7	6.2	10.8	8.8	5.9	5.6	3.7	2.5	2.5	2.7	2.2	1.9	2.1
1.5	1.2	1.2	1.1	1.1	1.2	2.6	4.2	2.7	2.0	1.7	1.8	1.6	1.7	1.5	1.3	4.2	4.7	5.3	4.4	4.2	4.1	4.9	5.2	3.7	3.2	6.4	5.3	3.9	2.5	2.3	1.9	1.8	1.7	1.6	1.7
1.7	1.8	1.9	1.7	2.0	2.0	2.0	2.1	2.6	2.1	1.9	1.8	1.8	1.9	1.9	1.8	3.7	4.3	4.0	4.3	4.5	5.5	3.9	2.9	1.8	2.0	1.8	1.9	2.2	2.0	1.9	1.9	2.0	1.7	1.6	1.6
2.1	2.2	2.2	2.1	1.9	1.8	1.6	1.6	1.4	1.4	2.4	2.1	1.8	1.8	1.7	1.7	1.5	1.6	1.5	2.0	1.6	3.1	3.2	1.6	2.0	2.0	1.7	1.7	1.7	2.0	1.7	1.7	1.7	1.6	1.9	2.0
2.0	1.8	1.5	1.3	1.1	1.0	.9	.8	.9	1.1	3.9	3.0	3.2	3.4	2.0	1.0	.9	.9	1.0	2.7	2.8	3.6	1.4	1.7	1.9	1.9	1.9	2.0	1.8	2.0	2.0	2.4	2.4	1.8	2.1	1.9
1.9	1.9	1.7	1.5	1.3	1.3	1.0	.8	.8	.5	5.4	8.8	4.9	5.3	1.6	.9	.8	.9	1.1	4.7	4.9	4.0	3.0	1.1	1.0	1.6	1.7	2.1	1.7	1.4	3.7	4.2	2.9	1.5	1.9	2.0
1.9	2.0	2.1	2.1	2.0	1.8	1.7	1.6	1.1	1.0	2.0	10.0	5.4	2.9	1.8	1.4	1.1	.9	.8	4.0	6.4	3.9	2.8	1.4	1.2	1.1	1.2	1.3	1.5	4.3	6.2	6.3	5.4	8.8	1.5	1.8
1.4	1.6	1.6	1.8	1.6	1.8	2.0	2.0	1.7	1.3	4.3	6.0	3.7	2.1	2.0	1.9	2.0	2.2	1.9	2.0	4.6	2.2	1.9	1.6	1.6	1.6	1.6	1.8	1.9	2.9	2.8	3.2	4.1	3.0	1.9	2.9
1.4	1.0	1.0	1.0	1.1	1.2	1.2	1.3	1.4	1.6	4.8	3.4	1.8	2.5	2.8	2.9	2.6	2.7	2.5	3.6	3.9	3.1	3.3	3.6	3.6	3.1	2.0	1.8	1.9	1.7	1.3	1.4	2.0	1.9	2.5	2.5
1.6	2.1	2.5	2.5	2.1	1.6	1.3	1.1	.9	.9	2.0	1.8	2.0	1.5	1.6	1.9	2.1	1.6	1.9	2.0	2.3	2.5	2.5	2.3	1.7	2.0	2.3	1.7	1.3	1.3	1.5	1.6	1.8	2.1	1.6	1.1
4.4	4.2	4.0	3.5	3.6	3.5	3.4	3.5	3.7	3.8	4.5	7.4	4.3	3.1	2.8	3.0	3.2	4.0	4.7	5.2	5.4	6.7	11.4	14.6	12.0	8.2	12.3	14.3	13.9	12.4	13.7	15.4	11.8	8.4	5.8	5.2
6.1	6.4	7.6	9.7	11.4	12.0	11.8	11.6	11.8	11.7	9.1	7.3	5.9	6.2	6.0	9.8	11.9	11.3	9.8	10.7	12.2	9.5	7.5	4.3	7.4	8.1	6.4	5.7	8.4	9.1	8.5	6.8	8.5	8.5	9.7	5.5
9.4	8.7	8.3	8.1	7.7	7.6	7.3	6.8	7.4	6.4	7.5	8.1	9.1	9.5	9.3	7.7	6.9	6.1	5.4	4.7	4.2	4.1	5.2	5.1	4.3	5.0	5.3	5.3	6.3	6.2	6.5	6.1	5.5	7.1	10.4	10.2

Figure 28. ATOVS MEAN O-B brightness temperature differences (deg C). SEPTEMBER 2004
Channel: HIRS15 (700 hPa)
NOAA15, using all observations



8.0	8.0	8.1	8.2	8.3	8.4	8.4	8.3	8.4	8.5	8.6	8.0	8.0	8.0	8.0	7.2	6.5	6.1	5.9	5.8	5.8	5.8	5.9	6.1	6.2	6.4	6.6	6.9	7.1	7.3	7.5	7.6	7.7	7.8	7.9	8.0
6.7	6.7	6.7	6.7	6.8	7.0	7.1	6.9	6.5	6.2	5.5	5.6	6.5	7.9	7.8	5.5	3.6	3.2	2.8	3.0	3.2	3.3	3.6	4.8	4.2	4.4	4.7	5.0	5.3	5.7	6.0	6.0	6.2	6.4	6.5	6.7
4.5	4.4	4.8	4.7	4.4	4.2	3.9	3.8	3.7	3.6	3.5	3.7	3.5	5.5	3.2	1.5	.7	.3	.4	.8	.8	1.2	1.7	2.3	2.9	3.4	3.5	3.9	3.8	3.9	3.9	3.8	3.7	3.3	3.4	4.8
.6	.8	.0	-.4	.1	.8	.0	-.6	-.7	-.7	.0	.5	.6	.3	-.8	-1.8	-2.4	-2.5	-2.3	-1.8	-1.6	-1.2	-1.5	-1.1	-.7	.0	1.2	1.6	1.4	1.1	.6	.4	.0	.0	.1	.4
-3.9	-3.8	-4.2	-4.4	-4.2	-3.7	-3.8	-5.1	-5.8	-5.4	-5.1	-4.7	-4.3	-4.7	-5.2	-5.1	-5.0	-5.3	-4.7	-4.0	-3.4	-4.3	-4.4	-4.7	-4.7	-3.7	-2.9	-2.1	-2.2	-2.4	-3.0	-3.6	-4.2	-4.2	-4.0	-3.3
-7.8	-7.5	-6.9	-7.0	-7.1	-7.7	-8.4	-8.1	-8.8	-8.5	-8.8	-8.6	-7.7	-7.7	-7.6	-7.0	-6.9	-7.8	-7.4	-7.0	-7.1	-9.3	-9.8	-8.7	-8.8	-7.1	-6.0	-5.0	-6.5	-7.2	-8.1	-8.7	-9.0	-8.4	-8.3	-7.1
-8.9	-8.8	-8.6	-8.8	-9.3	-9.8	-10.4	-9.8	-10.2	-10.2	-10.1	-9.6	-9.0	-9.0	-8.7	-8.3	-9.4	-10.9	-10.1	-10.1	-10.6	-12.4	-12.3	-11.8	-11.5	-11.5	-10.6	-9.9	-9.6	-10.2	-10.6	-10.4	-10.3	-9.9	-9.6	-8.9
-10.0	-10.1	-10.1	-10.1	-10.1	-10.4	-10.3	-10.3	-10.0	-10.2	-10.2	-10.0	-9.9	-9.9	-9.7	-9.5	-10.4	-10.7	-10.7	-10.8	-10.9	-11.1	-11.1	-10.7	-10.5	-10.4	-10.8	-10.4	-10.2	-10.6	-10.6	-10.5	-10.4	-10.3	-10.3	-10.2
-10.1	-10.5	-10.4	-10.2	-10.0	-10.1	-9.9	-9.9	-9.7	-9.7	-9.3	-9.4	-9.7	-9.8	-9.5	-9.4	-9.4	-9.1	-9.4	-9.2	-9.6	-9.2	-9.6	-9.8	-9.9	-9.9	-10.1	-10.8	-10.1	-10.0	-10.0	-10.1	-10.2	-10.4	-10.5	-10.6
-10.3	-10.7	-10.7	-10.3	-10.2	-10.1	-9.8	-9.7	-9.3	-9.3	-9.3	-10.0	-10.1	-10.1	-9.4	-9.5	-9.5	-9.1	-9.5	-9.5	-9.9	-9.3	-9.4	-9.7	-9.8	-9.7	-10.0	-10.0	-10.1	-10.0	-9.8	-9.8	-9.7	-10.2	-10.3	-10.8
-9.4	-9.8	-9.9	-9.7	-9.6	-9.2	-9.1	-8.9	-8.5	-8.8	-8.2	-9.2	-10.1	-9.1	-8.5	-8.5	-8.5	-8.4	-8.9	-9.2	-9.9	-9.0	-8.8	-8.9	-9.0	-8.9	-9.0	-9.1	-9.2	-9.7	-9.4	-9.5	-9.2	-9.4	-9.4	-9.8
-5.4	-5.7	-6.2	-6.1	-6.0	-5.5	-5.7	-5.8	-5.6	-6.0	-6.8	-6.5	-7.6	-6.9	-6.1	-5.9	-5.6	-5.8	-6.2	-6.4	-6.1	-6.2	-6.5	-6.2	-6.0	-5.5	-5.0	-4.8	-5.0	-5.6	-5.3	-5.1	-4.9	-5.2	-5.3	-5.4
-.1	.2	-.5	-.5	-.5	-.2	-.4	-.5	-.9	-.9	-1.3	-2.4	-2.9	-2.7	-2.0	-2.0	-1.9	-2.2	-1.7	-2.4	-2.3	-2.7	-2.9	-2.7	-2.3	-1.8	-1.0	-.2	.1	-.2	-.3	-.6	-.1	-.8	-.8	.4
2.5	3.0	2.4	2.5	3.0	3.0	3.0	3.3	3.3	3.3	3.6	3.1	3.2	3.5	3.5	3.1	3.1	2.7	3.3	2.7	2.7	2.8	2.6	2.4	2.3	2.4	2.7	2.9	3.0	3.0	2.8	2.5	2.4	2.4	2.3	2.7
4.9	5.0	5.0	4.8	5.2	5.5	5.8	6.3	6.7	7.0	7.2	7.1	7.5	8.3	8.4	8.3	8.0	8.0	8.3	8.2	8.6	8.6	8.4	8.3	8.2	8.1	8.0	7.9	7.7	7.3	6.7	6.3	6.3	6.0	5.3	5.1
10.2	9.9	10.1	10.0	9.9	10.0	10.2	10.5	10.7	11.0	11.5	12.1	11.6	11.4	11.2	11.2	11.5	12.2	13.1	14.1	14.8	14.8	15.2	15.9	15.4	14.5	15.1	15.4	16.0	14.2	13.9	13.9	12.6	11.8	11.4	10.7
16.9	16.4	16.0	16.8	16.2	16.1	15.8	15.7	15.9	15.9	15.6	16.0	14.1	13.5	13.5	14.5	16.6	20.4	23.1	23.8	23.8	24.4	25.6	26.5	24.2	24.4	26.1	25.5	25.1	24.1	24.0	25.1	23.4	22.0	19.3	17.7
21.2	20.8	20.4	20.6	20.8	21.0	21.3	21.6	22.0	21.1	19.6	18.7	18.2	18.4	19.1	20.3	21.6	23.3	24.7	25.8	26.6	27.2	27.2	28.2	29.9	29.5	25.0	26.9	27.5	26.8	26.1	25.5	25.0	24.0	22.2	21.7

Figure 29. ATOVS SD O-B brightness temperature differences (deg C). SEPTEMBER 2004
Channel: HIRS15 (700 hPa)
NOAA15, using all observations

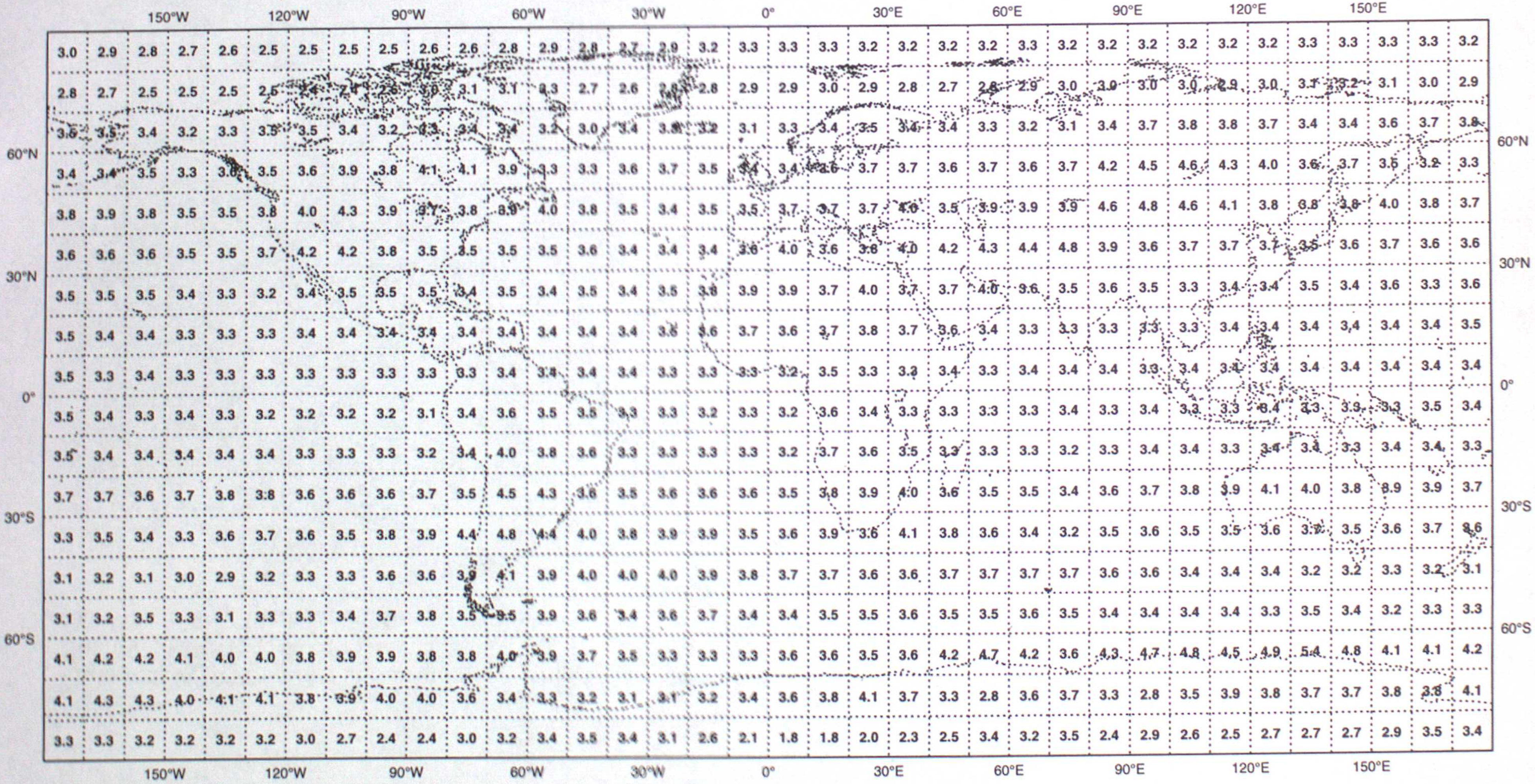
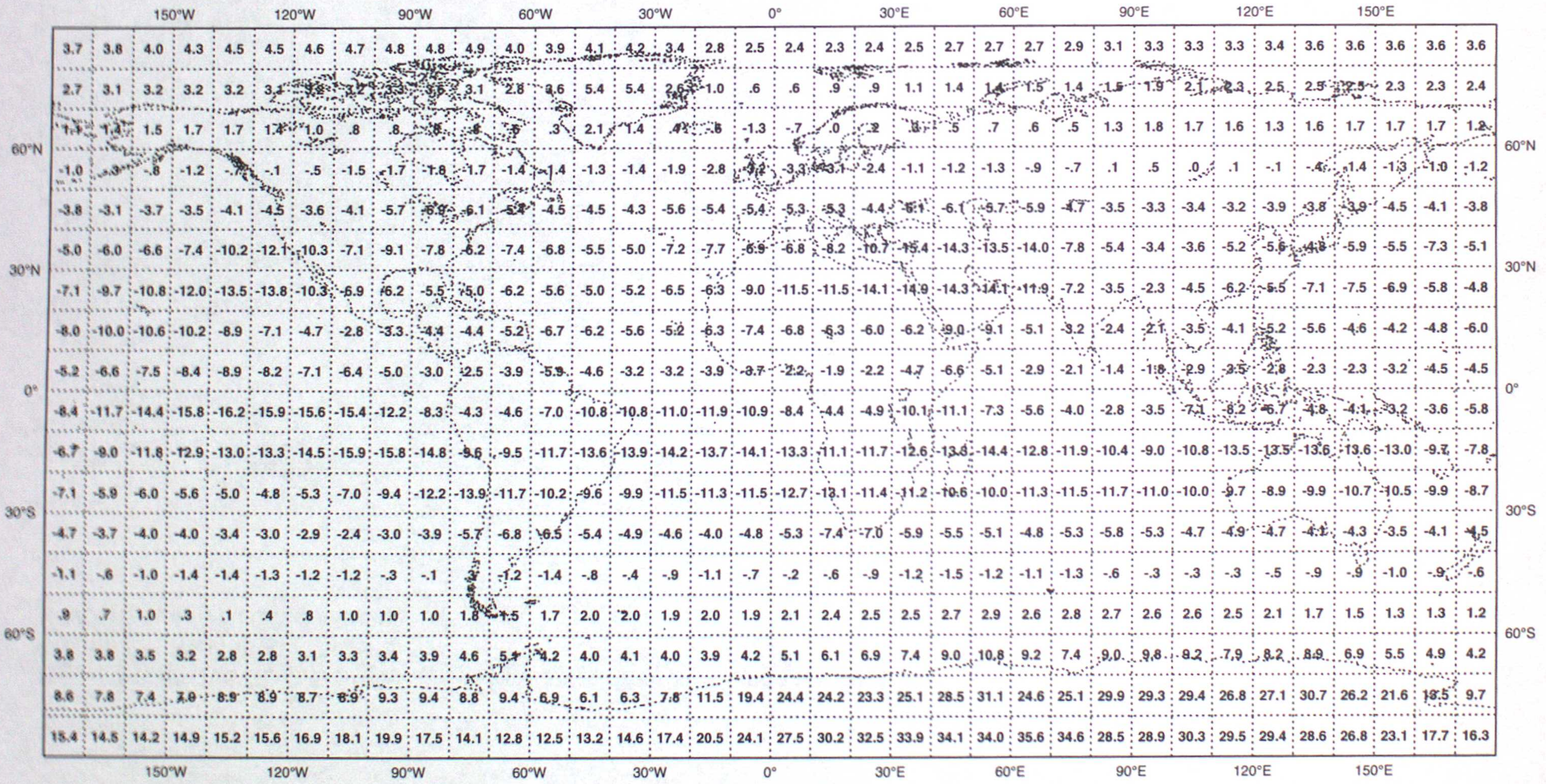
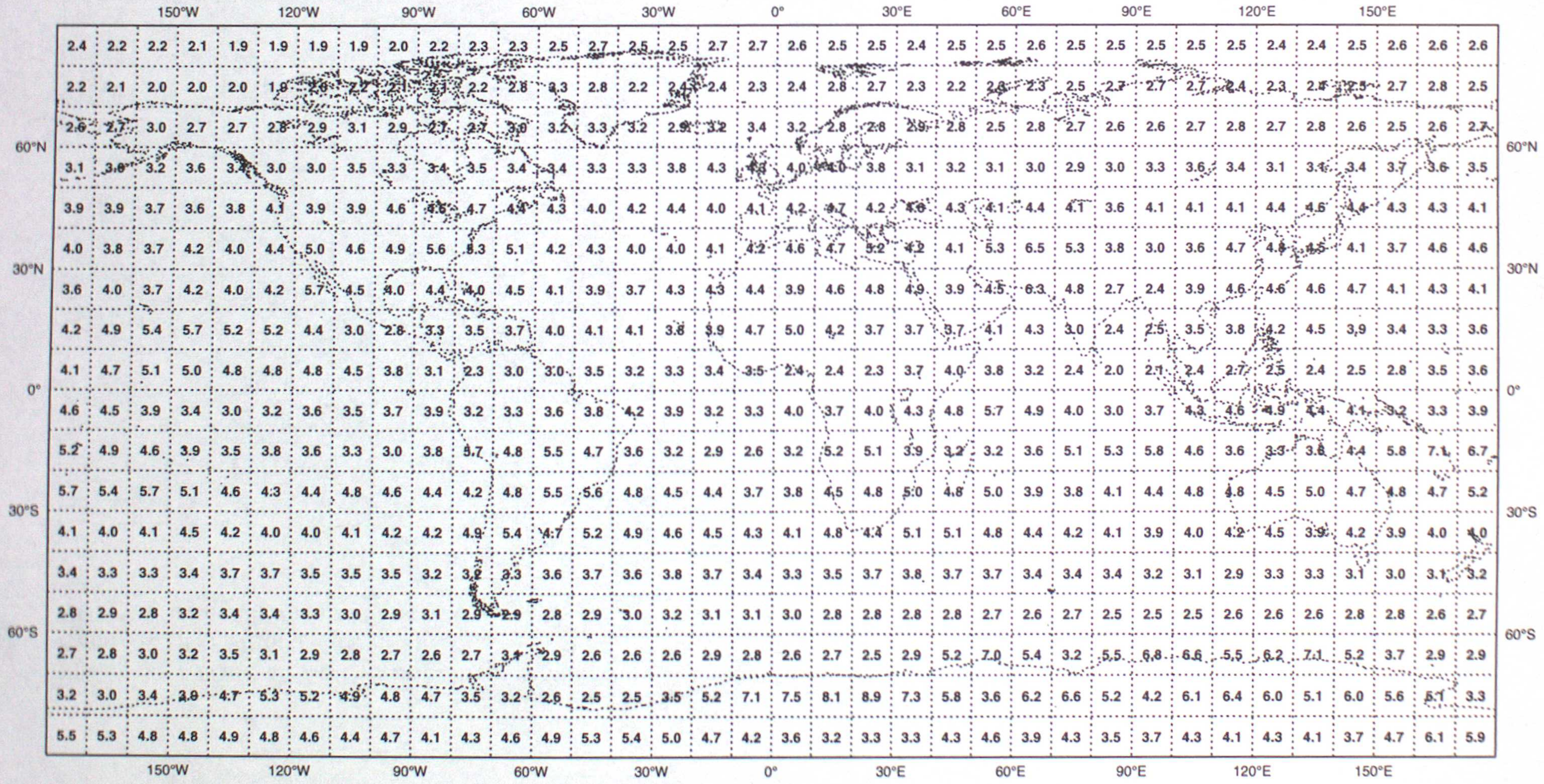

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
3.0 2.9 2.8 2.7 2.6 2.5 2.5 2.5 2.5 2.6 2.6 2.8 2.9 2.8 2.7 2.9 3.2 3.3 3.3 3.3 3.2 3.2 3.2 3.2 3.3 3.2 3.2 3.2 3.2 3.2 3.2 3.3 3.3 3.3 3.3 3.2
2.8 2.7 2.5 2.5 2.5 2.5 2.4 2.4 2.6 3.0 3.1 3.1 3.3 2.7 2.6 2.8 2.8 2.9 2.9 3.0 2.9 2.8 2.7 2.8 2.9 3.0 3.0 3.0 3.0 2.9 3.0 3.1 3.2 3.1 3.0 2.9
3.6 3.5 3.4 3.2 3.3 3.5 3.5 3.4 3.2 3.3 3.4 3.4 3.2 3.0 3.4 3.8 3.2 3.1 3.3 3.4 3.5 3.4 3.4 3.3 3.2 3.1 3.4 3.7 3.8 3.8 3.7 3.4 3.4 3.6 3.7 3.8
3.4 3.4 3.5 3.3 3.6 3.5 3.6 3.9 3.8 4.1 4.1 3.9 3.3 3.3 3.6 3.7 3.5 3.4 3.4 3.6 3.7 3.7 3.6 3.7 3.6 3.7 4.2 4.5 4.6 4.3 4.0 3.6 3.7 3.5 3.2 3.3
3.8 3.9 3.8 3.5 3.5 3.8 4.0 4.3 3.9 3.7 3.8 3.9 4.0 3.8 3.5 3.4 3.5 3.5 3.7 3.7 3.7 4.0 3.5 3.9 3.9 3.9 4.6 4.8 4.6 4.1 3.8 3.8 3.8 4.0 3.8 3.7
3.6 3.6 3.6 3.5 3.5 3.7 4.2 4.2 3.8 3.5 3.5 3.5 3.5 3.6 3.4 3.4 3.4 3.6 4.0 3.6 3.6 4.0 4.2 4.3 4.4 4.8 3.9 3.6 3.7 3.7 3.7 3.5 3.6 3.7 3.6 3.6
3.5 3.5 3.5 3.4 3.3 3.2 3.4 3.5 3.5 3.5 3.4 3.5 3.4 3.5 3.4 3.5 3.8 3.9 3.9 3.7 4.0 3.7 3.7 4.0 3.6 3.5 3.6 3.5 3.3 3.4 3.4 3.5 3.4 3.6 3.3 3.6
3.5 3.4 3.4 3.3 3.3 3.3 3.4 3.4 3.4 3.4 3.4 3.4 3.4 3.4 3.4 3.5 3.6 3.7 3.6 3.7 3.8 3.7 3.6 3.4 3.3 3.3 3.3 3.3 3.3 3.4 3.4 3.4 3.4 3.4 3.4 3.5
3.5 3.3 3.4 3.3 3.3 3.3 3.3 3.3 3.3 3.3 3.3 3.4 3.4 3.4 3.4 3.3 3.3 3.3 3.2 3.5 3.3 3.3 3.4 3.3 3.4 3.4 3.4 3.3 3.4 3.4 3.4 3.4 3.4 3.4 3.4 3.4
3.5 3.4 3.3 3.4 3.3 3.2 3.2 3.2 3.2 3.1 3.4 3.6 3.5 3.5 3.3 3.3 3.2 3.3 3.2 3.6 3.4 3.3 3.3 3.3 3.3 3.4 3.3 3.4 3.3 3.3 3.4 3.3 3.9 3.3 3.5 3.4
3.5 3.4 3.4 3.4 3.4 3.4 3.3 3.3 3.3 3.2 3.4 4.0 3.8 3.6 3.3 3.3 3.3 3.3 3.2 3.7 3.6 3.5 3.3 3.3 3.3 3.2 3.3 3.4 3.4 3.3 3.4 3.4 3.3 3.4 3.4 3.3
3.7 3.7 3.6 3.7 3.8 3.8 3.6 3.6 3.6 3.7 3.5 4.5 4.3 3.6 3.5 3.6 3.6 3.6 3.5 3.8 3.9 4.0 3.6 3.5 3.5 3.4 3.6 3.7 3.8 3.9 4.1 4.0 3.8 3.9 3.9 3.7
3.3 3.5 3.4 3.3 3.6 3.7 3.6 3.5 3.8 3.9 4.4 4.8 4.4 4.0 3.8 3.9 3.9 3.5 3.6 3.9 3.6 4.1 3.8 3.6 3.4 3.2 3.5 3.6 3.5 3.5 3.6 3.7 3.5 3.6 3.7 3.6
3.1 3.2 3.1 3.0 2.9 3.2 3.3 3.3 3.6 3.6 3.9 4.1 3.9 4.0 4.0 4.0 3.9 3.8 3.7 3.7 3.6 3.6 3.7 3.7 3.7 3.7 3.6 3.6 3.4 3.4 3.4 3.2 3.2 3.3 3.2 3.1
3.1 3.2 3.5 3.3 3.1 3.3 3.3 3.4 3.7 3.8 3.5 3.5 3.9 3.6 3.4 3.6 3.7 3.4 3.4 3.5 3.5 3.6 3.5 3.5 3.6 3.5 3.4 3.4 3.4 3.4 3.3 3.5 3.4 3.2 3.3 3.3
4.1 4.2 4.2 4.1 4.0 4.0 3.8 3.9 3.9 3.8 3.8 4.0 3.9 3.7 3.5 3.3 3.3 3.3 3.6 3.6 3.5 3.6 4.2 4.7 4.2 3.6 4.3 4.7 4.8 4.5 4.9 5.4 4.8 4.1 4.1 4.2
4.1 4.3 4.3 4.0 4.1 4.1 3.8 3.9 4.0 4.0 3.6 3.4 3.3 3.2 3.1 3.1 3.2 3.4 3.6 3.8 4.1 3.7 3.3 2.8 3.6 3.7 3.3 2.8 3.5 3.9 3.8 3.7 3.7 3.8 3.8 4.1
3.3 3.3 3.2 3.2 3.2 3.2 3.0 2.7 2.4 2.4 3.0 3.2 3.4 3.5 3.4 3.1 2.6 2.1 1.8 1.8 2.0 2.3 2.5 3.4 3.2 3.5 2.4 2.9 2.6 2.5 2.7 2.7 2.7 2.9 3.5 3.4

Figure 30. ATOVS MEAN O-B brightness temperature differences (deg C). SEPTEMBER 2004
Channel: HIRS11 (500 - 700 hPa)
NOAA15, using all observations



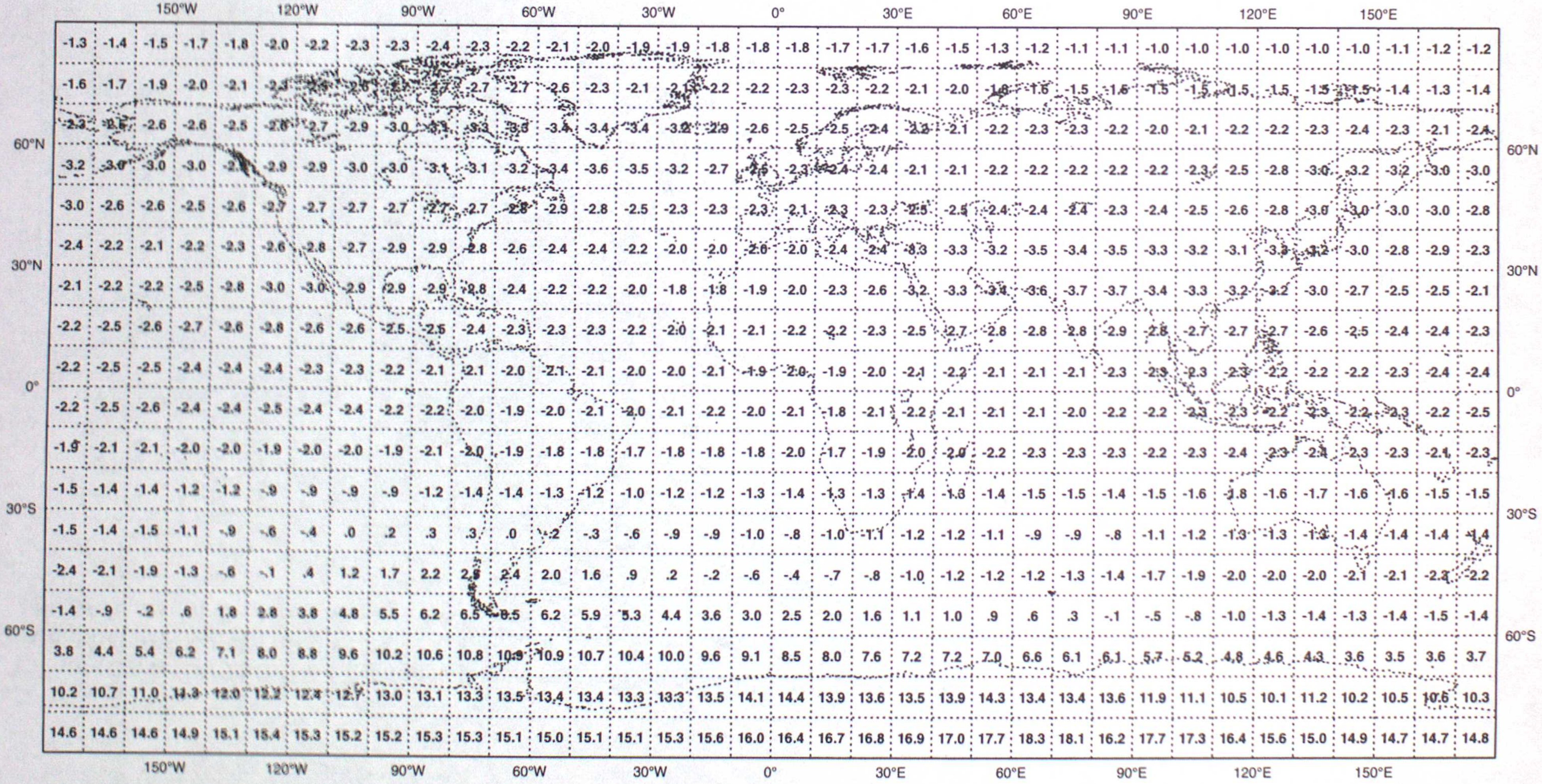
3.7	3.8	4.0	4.3	4.5	4.5	4.6	4.7	4.8	4.8	4.9	4.0	3.9	4.1	4.2	3.4	2.8	2.5	2.4	2.3	2.4	2.5	2.7	2.7	2.7	2.9	3.1	3.3	3.3	3.3	3.4	3.6	3.6	3.6	3.6	3.6
2.7	3.1	3.2	3.2	3.2	3.1	3.8	3.2	3.3	3.5	3.1	2.8	3.6	5.4	5.4	2.6	1.0	.6	.6	.9	.9	1.1	1.4	1.4	1.5	1.4	1.5	1.9	2.1	2.3	2.5	2.5	2.5	2.3	2.3	2.4
1.1	1.4	1.5	1.7	1.7	1.4	1.0	.8	.8	.8	.8	.5	.3	2.1	1.4	.4	-.6	-1.3	-.7	.0	.2	.3	.5	.7	.6	.5	1.3	1.8	1.7	1.6	1.3	1.6	1.7	1.7	1.7	1.2
-1.0	-.3	-.8	-1.2	-.7	-.1	-.5	-1.5	-1.7	-1.8	-1.7	-1.4	-1.4	-1.3	-1.4	-1.9	-2.8	-3.2	-3.3	-3.1	-2.4	-1.1	-1.2	-1.3	-.9	-.7	.1	.5	.0	.1	-.1	-.4	-1.4	-1.3	-1.0	-1.2
-3.8	-3.1	-3.7	-3.5	-4.1	-4.5	-3.6	-4.1	-5.7	-6.9	-6.1	-5.4	-4.5	-4.5	-4.3	-5.6	-5.4	-5.4	-5.3	-5.3	-4.4	-6.1	-6.1	-5.7	-5.9	-4.7	-3.5	-3.3	-3.4	-3.2	-3.9	-3.8	-3.9	-4.5	-4.1	-3.8
-5.0	-6.0	-6.6	-7.4	-10.2	-12.1	-10.3	-7.1	-9.1	-7.8	-6.2	-7.4	-6.8	-5.5	-5.0	-7.2	-7.7	-6.9	-6.8	-8.2	-10.7	-15.4	-14.3	-13.5	-14.0	-7.8	-5.4	-3.4	-3.6	-5.2	-5.6	-4.8	-5.9	-5.5	-7.3	-5.1
-7.1	-9.7	-10.8	-12.0	-13.5	-13.8	-10.3	-6.9	-6.2	-5.5	-5.0	-6.2	-5.6	-5.0	-5.2	-6.5	-6.3	-9.0	-11.5	-11.5	-14.1	-14.9	-14.3	-14.1	-11.9	-7.2	-3.5	-2.3	-4.5	-6.2	-5.5	-7.1	-7.5	-6.9	-5.8	-4.8
-8.0	-10.0	-10.6	-10.2	-8.9	-7.1	-4.7	-2.8	-3.3	-4.4	-4.4	-5.2	-6.7	-6.2	-5.6	-5.2	-6.3	-7.4	-6.8	-6.3	-6.0	-6.2	-9.0	-9.1	-5.1	-3.2	-2.4	-2.1	-3.5	-4.1	-5.2	-5.6	-4.6	-4.2	-4.8	-6.0
-5.2	-6.6	-7.5	-8.4	-8.9	-8.2	-7.1	-6.4	-5.0	-3.0	-2.5	-3.9	-5.9	-4.6	-3.2	-3.2	-3.9	-3.7	-2.2	-1.9	-2.2	-4.7	-6.6	-5.1	-2.9	-2.1	-1.4	-1.8	-2.9	-3.5	-2.8	-2.3	-2.3	-3.2	-4.5	-4.5
-8.4	-11.7	-14.4	-15.8	-16.2	-15.9	-15.6	-15.4	-12.2	-8.3	-4.3	-4.6	-7.0	-10.8	-10.8	-11.0	-11.9	-10.9	-8.4	-4.4	-4.9	-10.1	-11.1	-7.3	-5.6	-4.0	-2.8	-3.5	-7.1	-8.2	-6.7	-4.8	-4.1	-3.2	-3.6	-5.8
-6.7	-9.0	-11.8	-12.9	-13.0	-13.3	-14.5	-15.9	-15.8	-14.8	-9.6	-9.5	-11.7	-13.6	-13.9	-14.2	-13.7	-14.1	-13.3	-11.1	-11.7	-12.6	-13.8	-14.4	-12.8	-11.9	-10.4	-9.0	-10.8	-13.5	-13.5	-13.6	-13.6	-13.0	-9.7	-7.8
-7.1	-5.9	-6.0	-5.6	-5.0	-4.8	-5.3	-7.0	-9.4	-12.2	-13.9	-11.7	-10.2	-9.6	-9.9	-11.5	-11.3	-11.5	-12.7	-13.1	-11.4	-11.2	-10.6	-10.0	-11.3	-11.5	-11.7	-11.0	-10.0	-9.7	-8.9	-9.9	-10.7	-10.5	-9.9	-8.7
-4.7	-3.7	-4.0	-4.0	-3.4	-3.0	-2.9	-2.4	-3.0	-3.9	-5.7	-6.8	-6.5	-5.4	-4.9	-4.6	-4.0	-4.8	-5.3	-7.4	-7.0	-5.9	-5.5	-5.1	-4.8	-5.3	-5.8	-5.3	-4.7	-4.9	-4.7	-4.1	-4.3	-3.5	-4.1	-4.5
-1.1	-.6	-1.0	-1.4	-1.4	-1.3	-1.2	-1.2	-.3	-.1	.3	-1.2	-1.4	-.8	-.4	-.9	-1.1	-.7	-.2	-.6	-.9	-1.2	-1.5	-1.2	-1.1	-1.3	-.6	-.3	-.3	-.3	-.5	-.9	-.9	-1.0	-.9	-.6
.9	.7	1.0	.3	.1	.4	.8	1.0	1.0	1.0	1.8	1.5	1.7	2.0	2.0	1.9	2.0	1.9	2.1	2.4	2.5	2.5	2.7	2.9	2.6	2.8	2.7	2.6	2.6	2.5	2.1	1.7	1.5	1.3	1.3	1.2
3.8	3.8	3.5	3.2	2.8	2.8	3.1	3.3	3.4	3.9	4.6	5.4	4.2	4.0	4.1	4.0	3.9	4.2	5.1	6.1	6.9	7.4	9.0	10.8	9.2	7.4	9.0	9.8	8.2	7.9	8.2	8.9	6.9	5.5	4.9	4.2
8.6	7.8	7.4	7.0	8.9	8.9	8.7	6.9	9.3	9.4	8.8	9.4	6.9	6.1	6.3	7.8	11.5	19.4	24.4	24.2	23.3	25.1	28.5	31.1	24.6	25.1	29.9	29.3	29.4	26.8	27.1	30.7	26.2	21.6	18.5	9.7
15.4	14.5	14.2	14.9	15.2	15.6	16.9	18.1	19.9	17.5	14.1	12.8	12.5	13.2	14.6	17.4	20.5	24.1	27.5	30.2	32.5	33.9	34.1	34.0	35.6	34.6	28.5	28.9	30.3	29.5	29.4	28.6	26.8	23.1	17.7	16.3

Figure 31. ATOVS SD O-B brightness temperature differences (deg C). SEPTEMBER 2004
Channel: HIRS11 (500 - 700 hPa)
NOAA15, using all observations



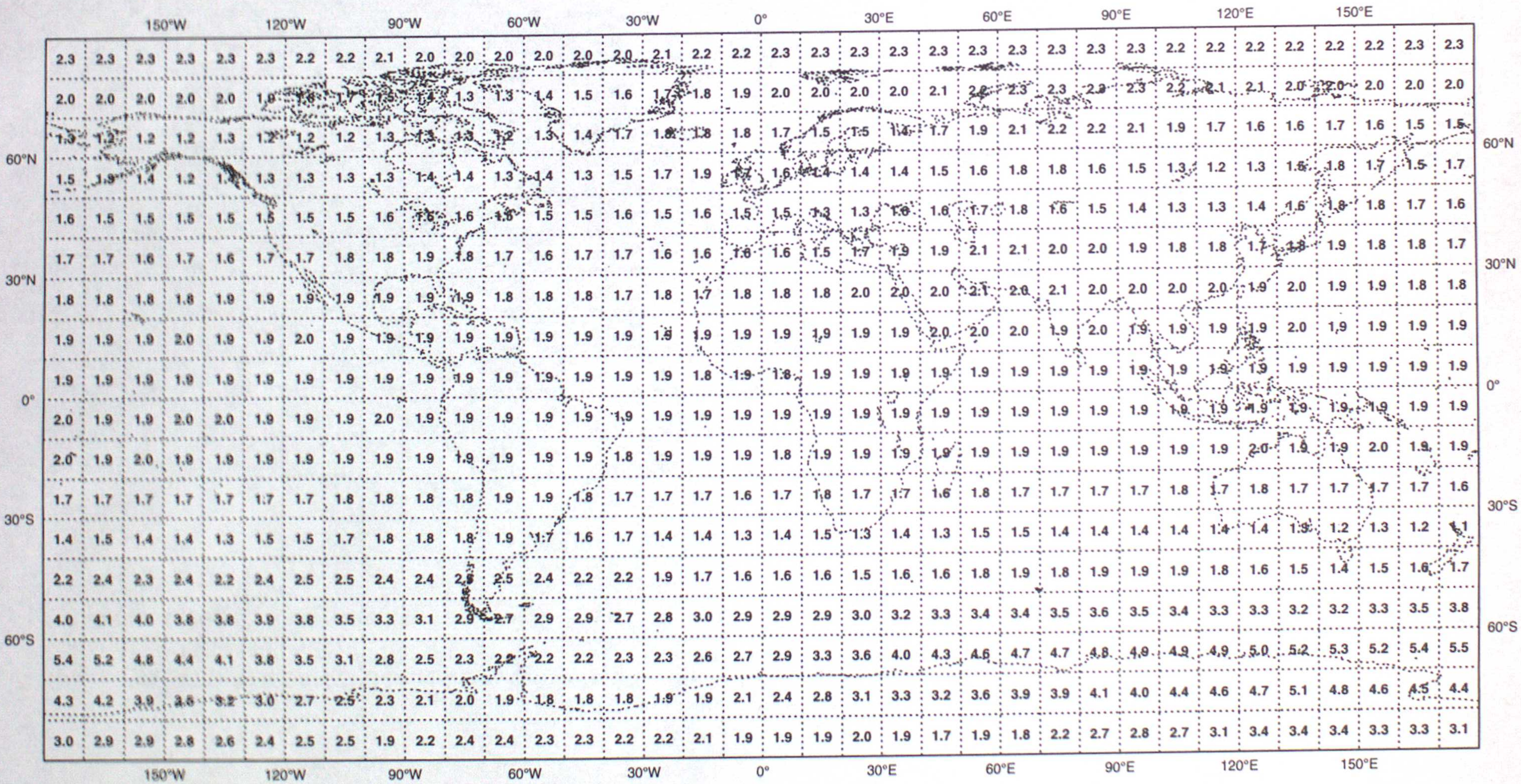
2.4	2.2	2.2	2.1	1.9	1.9	1.9	1.9	2.0	2.2	2.3	2.3	2.5	2.7	2.5	2.5	2.7	2.7	2.6	2.5	2.5	2.4	2.5	2.5	2.6	2.5	2.5	2.5	2.5	2.5	2.4	2.4	2.5	2.6	2.6	2.6
2.2	2.1	2.0	2.0	2.0	1.9	2.0	2.2	2.1	2.1	2.2	2.8	3.3	2.8	2.2	2.4	2.4	2.3	2.4	2.8	2.7	2.3	2.2	2.8	2.3	2.5	2.7	2.7	2.7	2.4	2.3	2.4	2.5	2.7	2.8	2.5
2.6	2.7	3.0	2.7	2.7	2.8	2.9	3.1	2.9	2.7	2.7	3.0	3.2	3.3	3.2	2.9	3.2	3.4	3.2	2.8	2.8	2.9	2.8	2.5	2.8	2.7	2.6	2.6	2.7	2.8	2.7	2.8	2.6	2.5	2.6	2.7
3.1	3.6	3.2	3.6	3.4	3.0	3.0	3.5	3.3	3.4	3.5	3.4	3.4	3.3	3.3	3.8	4.3	4.3	4.0	4.0	3.8	3.1	3.2	3.1	3.0	2.9	3.0	3.3	3.6	3.4	3.1	3.1	3.4	3.7	3.6	3.5
3.9	3.9	3.7	3.6	3.8	4.1	3.9	3.9	4.6	4.6	4.7	4.4	4.3	4.0	4.2	4.4	4.0	4.1	4.2	4.7	4.2	4.6	4.3	4.1	4.4	4.1	3.6	4.1	4.1	4.1	4.4	4.6	4.4	4.3	4.3	4.1
4.0	3.8	3.7	4.2	4.0	4.4	5.0	4.6	4.9	5.6	5.3	5.1	4.2	4.3	4.0	4.0	4.1	4.2	4.6	4.7	5.2	4.2	4.1	5.3	6.5	5.3	3.8	3.0	3.6	4.7	4.8	4.5	4.1	3.7	4.6	4.6
3.6	4.0	3.7	4.2	4.0	4.2	5.7	4.5	4.0	4.4	4.0	4.5	4.1	3.9	3.7	4.3	4.3	4.4	3.9	4.6	4.8	4.9	3.9	4.5	6.3	4.8	2.7	2.4	3.9	4.6	4.6	4.6	4.7	4.1	4.3	4.1
4.2	4.9	5.4	5.7	5.2	5.2	4.4	3.0	2.8	3.3	3.5	3.7	4.0	4.1	4.1	3.8	3.9	4.7	5.0	4.2	3.7	3.7	3.7	4.1	4.3	3.0	2.4	2.5	3.5	3.8	4.2	4.5	3.9	3.4	3.3	3.6
4.1	4.7	5.1	5.0	4.8	4.8	4.8	4.5	3.8	3.1	2.3	3.0	3.0	3.5	3.2	3.3	3.4	3.5	2.4	2.4	2.3	3.7	4.0	3.8	3.2	2.4	2.0	2.1	2.4	2.7	2.5	2.4	2.5	2.8	3.5	3.6
4.6	4.5	3.9	3.4	3.0	3.2	3.6	3.5	3.7	3.9	3.2	3.3	3.6	3.8	4.2	3.9	3.2	3.3	4.0	3.7	4.0	4.3	4.8	5.7	4.9	4.0	3.0	3.7	4.3	4.6	4.9	4.4	4.1	3.2	3.3	3.9
5.2	4.9	4.6	3.9	3.5	3.8	3.6	3.3	3.0	3.8	3.7	4.8	5.5	4.7	3.6	3.2	2.9	2.6	3.2	5.2	5.1	3.9	3.2	3.2	3.6	5.1	5.3	5.8	4.6	3.6	3.3	3.8	4.4	5.8	7.1	6.7
5.7	5.4	5.7	5.1	4.6	4.3	4.4	4.8	4.6	4.4	4.2	4.8	5.5	5.6	4.8	4.5	4.4	3.7	3.8	4.5	4.8	5.0	4.8	5.0	3.9	3.8	4.1	4.4	4.8	4.8	4.5	5.0	4.7	4.8	4.7	5.2
4.1	4.0	4.1	4.5	4.2	4.0	4.0	4.1	4.2	4.2	4.9	5.4	4.7	5.2	4.9	4.6	4.5	4.3	4.1	4.8	4.4	5.1	5.1	4.8	4.4	4.2	4.1	3.9	4.0	4.2	4.5	3.9	4.2	3.9	4.0	4.0
3.4	3.3	3.3	3.4	3.7	3.7	3.5	3.5	3.5	3.2	3.2	3.3	3.6	3.7	3.6	3.8	3.7	3.4	3.3	3.5	3.7	3.8	3.7	3.7	3.4	3.4	3.4	3.2	3.1	2.9	3.3	3.3	3.1	3.0	3.1	3.2
2.8	2.9	2.8	3.2	3.4	3.4	3.3	3.0	2.9	3.1	2.9	2.9	2.8	2.9	3.0	3.2	3.1	3.1	3.0	2.8	2.8	2.8	2.8	2.7	2.6	2.7	2.5	2.5	2.5	2.6	2.6	2.6	2.8	2.8	2.6	2.7
2.7	2.8	3.0	3.2	3.5	3.1	2.9	2.8	2.7	2.6	2.7	3.4	2.9	2.6	2.6	2.6	2.9	2.8	2.6	2.7	2.5	2.9	5.2	7.0	5.4	3.2	5.5	6.8	6.6	5.5	6.2	7.1	5.2	3.7	2.9	2.9
3.2	3.0	3.4	3.9	4.7	5.3	5.2	4.9	4.8	4.7	3.5	3.2	2.6	2.5	2.5	3.5	5.2	7.1	7.5	8.1	8.9	7.3	5.8	3.6	6.2	6.6	5.2	4.2	6.1	6.4	6.0	5.1	6.0	5.6	5.1	3.3
5.5	5.3	4.8	4.8	4.9	4.8	4.6	4.4	4.7	4.1	4.3	4.6	4.9	5.3	5.4	5.0	4.7	4.2	3.6	3.2	3.3	3.3	4.3	4.6	3.9	4.3	3.5	3.7	4.3	4.1	4.3	4.1	3.7	4.7	6.1	5.9

Figure 32. ATOVS MEAN O-B brightness temperature differences (deg C). SEPTEMBER 2004
Channel: HIRS4 (400 hPa)
NOAA15, using all observations



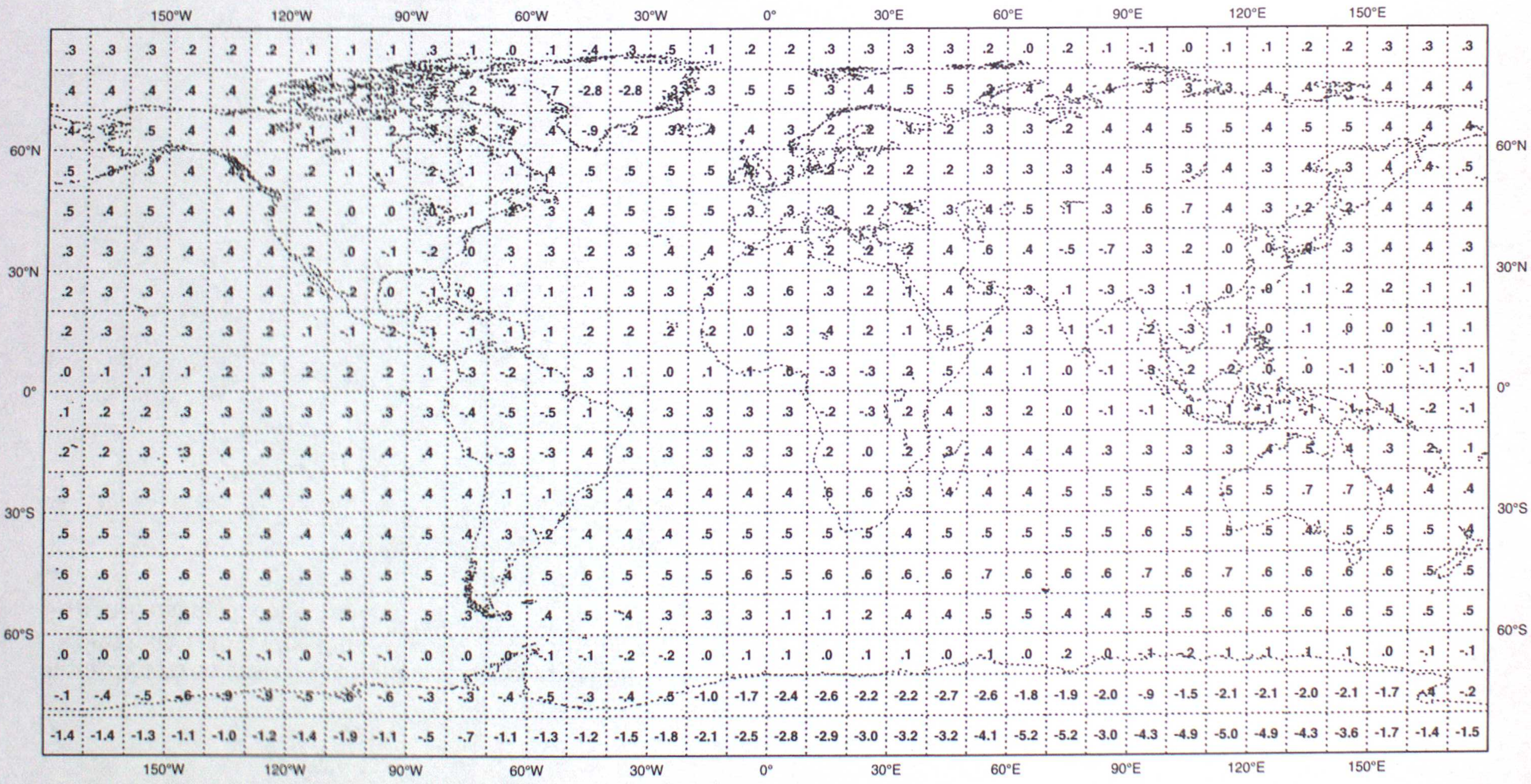
-1.3	-1.4	-1.5	-1.7	-1.8	-2.0	-2.2	-2.3	-2.3	-2.4	-2.3	-2.2	-2.1	-2.0	-1.9	-1.9	-1.8	-1.8	-1.8	-1.7	-1.7	-1.6	-1.5	-1.3	-1.2	-1.1	-1.1	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.1	-1.2	-1.2
-1.6	-1.7	-1.9	-2.0	-2.1	-2.3	-2.5	-2.6	-2.7	-2.7	-2.7	-2.7	-2.6	-2.3	-2.1	-2.1	-2.2	-2.2	-2.3	-2.3	-2.2	-2.1	-2.0	-1.6	-1.6	-1.5	-1.6	-1.5	-1.5	-1.5	-1.5	-1.5	-1.5	-1.4	-1.3	-1.4
-2.3	-2.6	-2.6	-2.6	-2.5	-2.8	-2.7	-2.9	-3.0	-3.1	-3.3	-3.3	-3.4	-3.4	-3.4	-3.2	-2.9	-2.6	-2.5	-2.5	-2.4	-2.3	-2.1	-2.2	-2.3	-2.3	-2.2	-2.0	-2.1	-2.2	-2.2	-2.3	-2.4	-2.3	-2.1	-2.4
-3.2	-3.0	-3.0	-3.0	[illegible]	-2.9	-2.9	-3.0	-3.0	-3.1	-3.1	-3.2	-3.4	-3.6	-3.5	-3.2	-2.7	-2.5	-2.3	-2.4	-2.4	-2.1	-2.1	-2.2	-2.2	-2.2	-2.2	-2.2	-2.3	-2.5	-2.8	-3.0	-3.2	-3.2	-3.0	-3.0
-3.0	-2.6	-2.6	-2.5	-2.6	-2.7	-2.7	-2.7	-2.7	-2.7	-2.7	-2.8	-2.9	-2.8	-2.5	-2.3	-2.3	-2.3	-2.1	-2.3	-2.3	-2.5	-2.5	-2.4	-2.4	-2.4	-2.3	-2.4	-2.5	-2.6	-2.8	-3.0	-3.0	-3.0	-3.0	-2.8
-2.4	-2.2	-2.1	-2.2	-2.3	-2.6	-2.8	-2.7	-2.9	-2.9	-2.8	-2.6	-2.4	-2.4	-2.2	-2.0	-2.0	-2.0	-2.0	-2.4	-2.4	-3.3	-3.3	-3.2	-3.5	-3.4	-3.5	-3.3	-3.2	-3.1	-3.3	-3.2	-3.0	-2.8	-2.9	-2.3
-2.1	-2.2	-2.2	-2.5	-2.8	-3.0	-3.0	-2.9	-2.9	-2.9	-2.8	-2.4	-2.2	-2.2	-2.0	-1.8	-1.8	-1.9	-2.0	-2.3	-2.6	-3.2	-3.3	-3.4	-3.6	-3.7	-3.7	-3.4	-3.3	-3.2	-3.2	-3.0	-2.7	-2.5	-2.5	-2.1
-2.2	-2.5	-2.6	-2.7	-2.6	-2.8	-2.6	-2.6	-2.5	-2.5	-2.4	-2.3	-2.3	-2.3	-2.2	-2.0	-2.1	-2.1	-2.2	-2.2	-2.3	-2.5	-2.7	-2.8	-2.8	-2.8	-2.9	-2.8	-2.7	-2.7	-2.7	-2.6	-2.5	-2.4	-2.4	-2.3
-2.2	-2.5	-2.5	-2.4	-2.4	-2.4	-2.3	-2.3	-2.2	-2.1	-2.1	-2.0	-2.1	-2.1	-2.0	-2.0	-2.1	-1.9	-2.0	-1.9	-2.0	-2.1	-2.2	-2.1	-2.1	-2.1	-2.3	-2.3	-2.3	-2.3	-2.2	-2.2	-2.2	-2.3	-2.4	-2.4
-2.2	-2.5	-2.6	-2.4	-2.4	-2.5	-2.4	-2.4	-2.2	-2.2	-2.0	-1.9	-2.0	-2.1	-2.0	-2.1	-2.2	-2.0	-2.1	-1.8	-2.1	-2.2	-2.1	-2.1	-2.1	-2.0	-2.2	-2.2	-2.3	-2.3	-2.2	-2.3	-2.2	-2.3	-2.2	-2.5
-1.9	-2.1	-2.1	-2.0	-2.0	-1.9	-2.0	-2.0	-1.9	-2.1	-2.0	-1.9	-1.8	-1.8	-1.7	-1.8	-1.8	-1.8	-2.0	-1.7	-1.9	-2.0	-2.0	-2.2	-2.3	-2.3	-2.3	-2.2	-2.3	-2.4	-2.3	-2.4	-2.3	-2.3	-2.1	-2.3
-1.5	-1.4	-1.4	-1.2	-1.2	-.9	-.9	-.9	-.9	-1.2	-1.4	-1.4	-1.3	-1.2	-1.0	-1.2	-1.2	-1.3	-1.4	-1.3	-1.3	-1.4	-1.3	-1.4	-1.5	-1.5	-1.4	-1.5	-1.6	-1.8	-1.6	-1.7	-1.6	-1.6	-1.5	-1.5
-1.5	-1.4	-1.5	-1.1	-.9	-.6	-.4	.0	.2	.3	.3	.0	-.2	-.3	-.6	-.9	-.9	-1.0	-.8	-1.0	-1.1	-1.2	-1.2	-1.1	-.9	-.9	-.8	-1.1	-1.2	-1.3	-1.3	-1.3	-1.4	-1.4	-1.4	-1.4
-2.4	-2.1	-1.9	-1.3	-.6	-.1	.4	1.2	1.7	2.2	2.6	2.4	2.0	1.6	.9	.2	-.2	-.6	-.4	-.7	-.8	-1.0	-1.2	-1.2	-1.2	-1.3	-1.4	-1.7	-1.9	-2.0	-2.0	-2.0	-2.1	-2.1	-2.3	-2.2
-1.4	-.9	-.2	.6	1.8	2.8	3.8	4.8	5.5	6.2	6.5	6.5	6.2	5.9	5.3	4.4	3.6	3.0	2.5	2.0	1.6	1.1	1.0	.9	.6	.3	-.1	-.5	-.8	-1.0	-1.3	-1.4	-1.3	-1.4	-1.5	-1.4
3.8	4.4	5.4	6.2	7.1	8.0	8.8	9.6	10.2	10.6	10.8	10.9	10.9	10.7	10.4	10.0	9.6	9.1	8.5	8.0	7.6	7.2	7.2	7.0	6.6	6.1	6.1	5.7	5.2	4.8	4.6	4.3	3.6	3.5	3.6	3.7
10.2	10.7	11.0	11.3	12.0	12.2	12.4	12.7	13.0	13.1	13.3	13.5	13.4	13.4	13.3	13.3	13.5	14.1	14.4	13.9	13.6	13.5	13.9	14.3	13.4	13.4	13.6	11.9	11.1	10.5	10.1	11.2	10.2	10.5	10.6	10.3
14.6	14.6	14.6	14.9	15.1	15.4	15.3	15.2	15.2	15.3	15.3	15.1	15.0	15.1	15.1	15.3	15.6	16.0	16.4	16.7	16.8	16.9	17.0	17.7	18.3	18.1	16.2	17.7	17.3	16.4	15.6	15.0	14.9	14.7	14.7	14.8

Figure 33. ATOVS SD O-B brightness temperature differences (deg C). SEPTEMBER 2004
Channel: HIRS4 (400 hPa)
NOAA15, using all observations



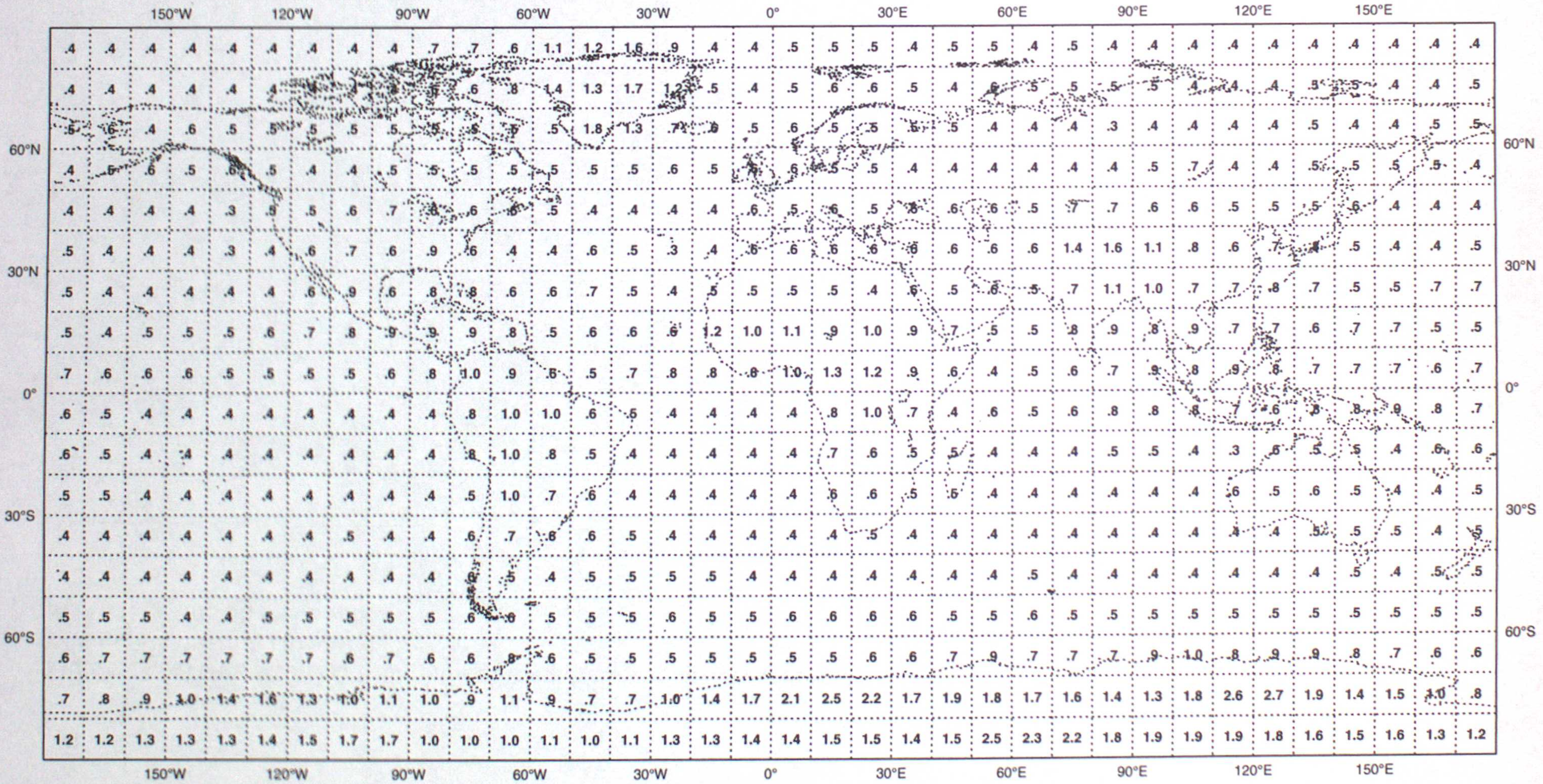
2.3	2.3	2.3	2.3	2.3	2.3	2.2	2.2	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.2	2.2	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.3
2.0	2.0	2.0	2.0	2.0	1.9	1.8	1.7	1.5	1.4	1.3	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0	2.0	2.0	2.0	2.1	2.2	2.3	2.3	2.3	2.3	2.2	2.1	2.1	2.0	2.0	2.0	2.0	2.0
1.3	1.2	1.2	1.2	1.3	1.2	1.2	1.2	1.3	1.3	1.3	1.2	1.3	1.4	1.7	1.8	1.8	1.8	1.7	1.5	1.5	1.4	1.7	1.9	2.1	2.2	2.2	2.1	1.9	1.7	1.6	1.6	1.7	1.6	1.5	1.5
1.5	1.9	1.4	1.2	1.4	1.3	1.3	1.3	1.3	1.4	1.4	1.3	1.4	1.3	1.5	1.7	1.9	1.7	1.6	1.4	1.4	1.4	1.5	1.6	1.8	1.8	1.6	1.5	1.3	1.2	1.3	1.6	1.8	1.7	1.5	1.7
1.6	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.6	1.6	1.6	1.6	1.5	1.5	1.6	1.5	1.6	1.5	1.5	1.3	1.3	1.6	1.6	1.7	1.8	1.6	1.5	1.4	1.3	1.3	1.4	1.6	1.8	1.8	1.7	1.6
1.7	1.7	1.6	1.7	1.6	1.7	1.7	1.8	1.8	1.9	1.8	1.7	1.6	1.7	1.7	1.6	1.6	1.6	1.6	1.5	1.7	1.9	1.9	2.1	2.1	2.0	2.0	1.9	1.8	1.8	1.7	1.8	1.9	1.8	1.8	1.7
1.8	1.8	1.8	1.8	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.8	1.8	1.8	1.7	1.8	1.7	1.8	1.8	1.8	2.0	2.0	2.0	2.1	2.0	2.1	2.0	2.0	2.0	2.0	1.9	2.0	1.9	1.9	1.8	1.8
1.9	1.9	1.9	2.0	1.9	1.9	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.0	2.0	1.9	2.0	1.9	1.9	1.9	1.9	2.0	1.9	1.9	1.9	1.9
1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.8	1.9	1.8	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
2.0	1.9	1.9	2.0	2.0	1.9	1.9	1.9	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
2.0	1.9	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.8	1.9	1.9	1.9	1.8	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	1.9	1.9	2.0	1.9	1.9
1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.8	1.8	1.8	1.8	1.9	1.9	1.8	1.7	1.7	1.7	1.6	1.7	1.8	1.7	1.7	1.6	1.8	1.7	1.7	1.7	1.7	1.8	1.7	1.8	1.7	1.7	1.7	1.7	1.6
1.4	1.5	1.4	1.4	1.3	1.5	1.5	1.7	1.8	1.8	1.8	1.9	1.7	1.6	1.7	1.4	1.4	1.3	1.4	1.5	1.3	1.4	1.3	1.5	1.5	1.4	1.4	1.4	1.4	1.4	1.4	1.3	1.2	1.3	1.2	1.1
2.2	2.4	2.3	2.4	2.2	2.4	2.5	2.5	2.4	2.4	2.6	2.5	2.4	2.2	2.2	1.9	1.7	1.6	1.6	1.6	1.5	1.6	1.6	1.8	1.9	1.8	1.9	1.9	1.9	1.8	1.6	1.5	1.4	1.5	1.6	1.7
4.0	4.1	4.0	3.8	3.8	3.9	3.8	3.5	3.3	3.1	2.9	2.7	2.9	2.9	2.7	2.8	3.0	2.9	2.9	2.9	3.0	3.2	3.3	3.4	3.4	3.5	3.6	3.5	3.4	3.3	3.3	3.2	3.2	3.3	3.5	3.8
5.4	5.2	4.8	4.4	4.1	3.8	3.5	3.1	2.8	2.5	2.3	2.2	2.2	2.2	2.3	2.3	2.6	2.7	2.9	3.3	3.6	4.0	4.3	4.6	4.7	4.7	4.8	4.9	4.9	4.9	5.0	5.2	5.3	5.2	5.4	5.5
4.3	4.2	3.9	3.6	3.2	3.0	2.7	2.5	2.3	2.1	2.0	1.9	1.8	1.8	1.8	1.9	1.9	2.1	2.4	2.8	3.1	3.3	3.2	3.6	3.9	3.9	4.1	4.0	4.4	4.6	4.7	5.1	4.8	4.6	4.5	4.4
3.0	2.9	2.9	2.8	2.6	2.4	2.5	2.5	1.9	2.2	2.4	2.4	2.3	2.3	2.2	2.2	2.1	1.9	1.9	1.9	2.0	1.9	1.7	1.9	1.8	2.2	2.7	2.8	2.7	3.1	3.4	3.4	3.4	3.3	3.3	3.1

Figure 34. ATOVS MEAN O-B brightness temperature differences (deg C). SEPTEMBER 2004
Channel: AMSUA-5 (700 hPa)
NOAA15, using all observations



.3	.3	.3	.2	.2	.2	.1	.1	.1	.3	.1	.0	.1	-.4	.3	.5	.1	.2	.2	.3	.3	.3	.3	.2	.0	.2	.1	-.1	.0	.1	.1	.2	.2	.3	.3	.3
.4	.4	.4	.4	.4	.4	.3	.3	.3	.3	.2	.2	.7	-2.8	-2.8	-.3	.3	.5	.5	.3	.4	.5	.5	.3	.4	.4	.4	.3	.3	.3	.4	.4	.3	.4	.4	.4
.4	.2	.5	.4	.4	.4	.1	.1	.2	.3	.3	.4	.4	-.9	-.2	.3	.4	.4	.3	.2	.2	.1	.2	.3	.3	.2	.4	.4	.5	.5	.4	.5	.5	.4	.4	.4
.5	.3	.3	.4	.4	.3	.2	.1	.1	.2	.1	.1	.4	.5	.5	.5	.5	.2	.3	.2	.2	.2	.2	.3	.3	.3	.4	.5	.3	.4	.3	.4	.3	.4	.4	.5
.5	.4	.5	.4	.4	.3	.2	.0	.0	.0	.1	.2	.3	.4	.5	.5	.5	.3	.3	.3	.2	.2	.3	.4	.5	.1	.3	.6	.7	.4	.3	.2	.2	.4	.4	.4
.3	.3	.3	.4	.4	.4	.2	.0	-.1	-.2	.0	.3	.3	.2	.3	.4	.4	.2	.4	.2	.2	.2	.4	.6	.4	-.5	-.7	.3	.2	.0	.0	.0	.3	.4	.4	.3
.2	.3	.3	.4	.4	.4	.2	-.2	.0	-.1	.0	.1	.1	.1	.3	.3	.3	.3	.6	.3	.2	.1	.4	.3	.3	.1	-.3	-.3	.1	.0	.0	.1	.2	.2	.1	.1
.2	.3	.3	.3	.3	.2	.1	-.1	-.2	-.1	-.1	.1	.1	.2	.2	.2	.2	.0	.3	.4	.2	.1	.5	.4	.3	-.1	-.1	-.2	-.3	.1	.0	.1	.0	.0	.1	.1
.0	.1	.1	.1	.2	.3	.2	.2	.2	.1	-.3	-.2	.1	.3	.1	.0	.1	.1	.0	-.3	-.3	.2	.5	.4	.1	.0	-.1	-.3	-.2	-.2	.0	.0	-.1	.0	-.1	-.1
.1	.2	.2	.3	.3	.3	.3	.3	.3	.3	-.4	-.5	-.5	.1	.4	.3	.3	.3	.3	-.2	-.3	.2	.4	.3	.2	.0	-.1	-.1	.0	.1	-.1	-.1	-.1	-.1	-.2	-.1
.2	.2	.3	.3	.4	.3	.4	.4	.4	.4	.1	-.3	-.3	.4	.3	.3	.3	.3	.3	.2	.0	.2	.3	.4	.4	.4	.3	.3	.3	.3	.4	.5	.4	.3	.2	.1
.3	.3	.3	.3	.4	.4	.3	.4	.4	.4	.4	.1	.1	.3	.4	.4	.4	.4	.4	.6	.6	.3	.4	.4	.4	.5	.5	.5	.4	.5	.5	.7	.7	.4	.4	.4
.5	.5	.5	.5	.5	.5	.4	.4	.4	.5	.4	.3	.2	.4	.4	.4	.5	.5	.5	.5	.5	.4	.5	.5	.5	.5	.5	.6	.5	.5	.5	.4	.5	.5	.5	.4
.6	.6	.6	.6	.6	.6	.5	.5	.5	.5	.3	.4	.5	.6	.5	.5	.5	.6	.5	.6	.6	.6	.6	.7	.6	.6	.6	.7	.6	.7	.6	.6	.6	.6	.5	.5
.6	.5	.5	.6	.5	.5	.5	.5	.5	.5	.3	.3	.4	.5	.4	.3	.3	.3	.1	.1	.2	.4	.4	.5	.5	.4	.4	.5	.5	.6	.6	.6	.6	.5	.5	.5
.0	.0	.0	.0	-.1	-.1	.0	-.1	-.1	.0	.0	.0	-.1	-.1	-.2	-.2	.0	.1	.1	.0	.1	.1	.0	-.1	.0	.2	.0	-.1	-.2	.1	.1	.1	.1	.0	-.1	-.1
-.1	-.4	-.5	-.6	-.9	-.9	-.5	-.6	-.6	-.3	-.3	-.4	-.5	-.3	-.4	-.5	-1.0	-1.7	-2.4	-2.6	-2.2	-2.2	-2.7	-2.6	-1.8	-1.9	-2.0	-.9	-1.5	-2.1	-2.1	-2.0	-2.1	-1.7	-.4	-.2
-1.4	-1.4	-1.3	-1.1	-1.0	-1.2	-1.4	-1.9	-1.1	-.5	-.7	-1.1	-1.3	-1.2	-1.5	-1.8	-2.1	-2.5	-2.8	-2.9	-3.0	-3.2	-3.2	-4.1	-5.2	-5.2	-3.0	-4.3	-4.9	-5.0	-4.9	-4.3	-3.6	-1.7	-1.4	-1.5

Figure 35. ATOVS SD O-B brightness temperature differences (deg C). SEPTEMBER 2004
Channel: AMSUA-5 (700 hPa)
NOAA15, using all observations



.4	.4	.4	.4	.4	.4	.4	.4	.4	.7	.7	.6	1.1	1.2	1.6	.9	.4	.4	.5	.5	.5	.4	.5	.5	.4	.5	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4
.4	.4	.4	.4	.4	.4	.4	.4	.4	.5	.6	.8	1.4	1.3	1.7	1.2	.5	.4	.5	.6	.6	.5	.4	.6	.5	.5	.5	.5	.4	.4	.4	.5	.5	.4	.4	.5
.5	.6	.4	.6	.5	.5	.5	.5	.5	.5	.5	.5	.5	1.8	1.3	.7	.6	.5	.6	.5	.5	.5	.5	.4	.4	.4	.3	.4	.4	.4	.4	.5	.4	.4	.5	.5
.4	.5	.6	.5	.6	.5	.4	.4	.5	.5	.5	.5	.5	.5	.5	.6	.5	.5	.6	.5	.5	.4	.4	.4	.4	.4	.4	.5	.7	.4	.4	.5	.5	.5	.5	.4
.4	.4	.4	.4	.3	.5	.5	.6	.7	.8	.6	.6	.5	.4	.4	.4	.4	.6	.5	.6	.5	.6	.6	.6	.5	.7	.7	.6	.6	.5	.5	.5	.6	.4	.4	.4
.5	.4	.4	.4	.3	.4	.6	.7	.6	.9	.6	.4	.4	.6	.5	.3	.4	.6	.6	.6	.6	.6	.6	.6	.6	1.4	1.6	1.1	.8	.6	.7	.4	.5	.4	.4	.5
.5	.4	.4	.4	.4	.4	.6	.9	.6	.8	.8	.6	.6	.7	.5	.4	.5	.5	.5	.5	.4	.6	.5	.6	.5	.7	1.1	1.0	.7	.7	.8	.7	.5	.5	.7	.7
.5	.4	.5	.5	.5	.6	.7	.8	.9	.9	.9	.8	.5	.6	.6	.6	1.2	1.0	1.1	.9	1.0	.9	.7	.5	.5	.8	.9	.8	.9	.7	.7	.6	.7	.7	.5	.5
.7	.6	.6	.6	.5	.5	.5	.5	.6	.8	1.0	.9	.6	.5	.7	.8	.8	.8	1.0	1.3	1.2	.9	.6	.4	.5	.6	.7	.9	.8	.9	.8	.7	.7	.7	.6	.7
.6	.5	.4	.4	.4	.4	.4	.4	.4	.4	.8	1.0	1.0	.6	.5	.4	.4	.4	.4	.8	1.0	.7	.4	.6	.5	.6	.8	.8	.8	.7	.6	.8	.8	.9	.8	.7
.6	.5	.4	.4	.4	.4	.4	.4	.4	.4	.8	1.0	.8	.5	.4	.4	.4	.4	.4	.7	.6	.5	.5	.4	.4	.4	.5	.5	.4	.3	.6	.5	.5	.4	.6	.6
.5	.5	.4	.4	.4	.4	.4	.4	.4	.4	.5	1.0	.7	.6	.4	.4	.4	.4	.4	.6	.6	.5	.5	.4	.4	.4	.4	.4	.4	.6	.5	.6	.5	.4	.4	.5
.4	.4	.4	.4	.4	.4	.4	.5	.4	.4	.6	.7	.6	.6	.5	.4	.4	.4	.4	.4	.5	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.5	.5	.5	.4	.5
.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.6	.5	.4	.5	.5	.5	.5	.4	.4	.4	.4	.4	.4	.4	.5	.4	.4	.4	.4	.4	.4	.4	.5	.4	.5	.5
.5	.5	.5	.4	.4	.5	.5	.5	.5	.5	.6	.6	.5	.5	.5	.6	.5	.5	.6	.6	.6	.6	.5	.5	.6	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5
.6	.7	.7	.7	.7	.7	.7	.6	.7	.6	.6	.8	.6	.5	.5	.5	.5	.5	.5	.5	.6	.6	.7	.9	.7	.7	.7	.9	1.0	.8	.9	.9	.8	.7	.6	.6
.7	.8	.9	1.0	1.4	1.6	1.3	1.0	1.1	1.0	.9	1.1	.9	.7	.7	1.0	1.4	1.7	2.1	2.5	2.2	1.7	1.9	1.8	1.7	1.6	1.4	1.3	1.8	2.6	2.7	1.9	1.4	1.5	1.0	.8
1.2	1.2	1.3	1.3	1.3	1.4	1.5	1.7	1.7	1.0	1.0	1.0	1.1	1.0	1.1	1.3	1.3	1.4	1.4	1.5	1.5	1.4	1.5	2.5	2.3	2.2	1.8	1.9	1.9	1.9	1.8	1.6	1.5	1.6	1.3	1.2

Figure 36. ATOVS MEAN O-B brightness temperature differences (deg C). SEPTEMBER 2004
Channel: AMSUA-7 (300 hPa)
NOAA15, using all observations

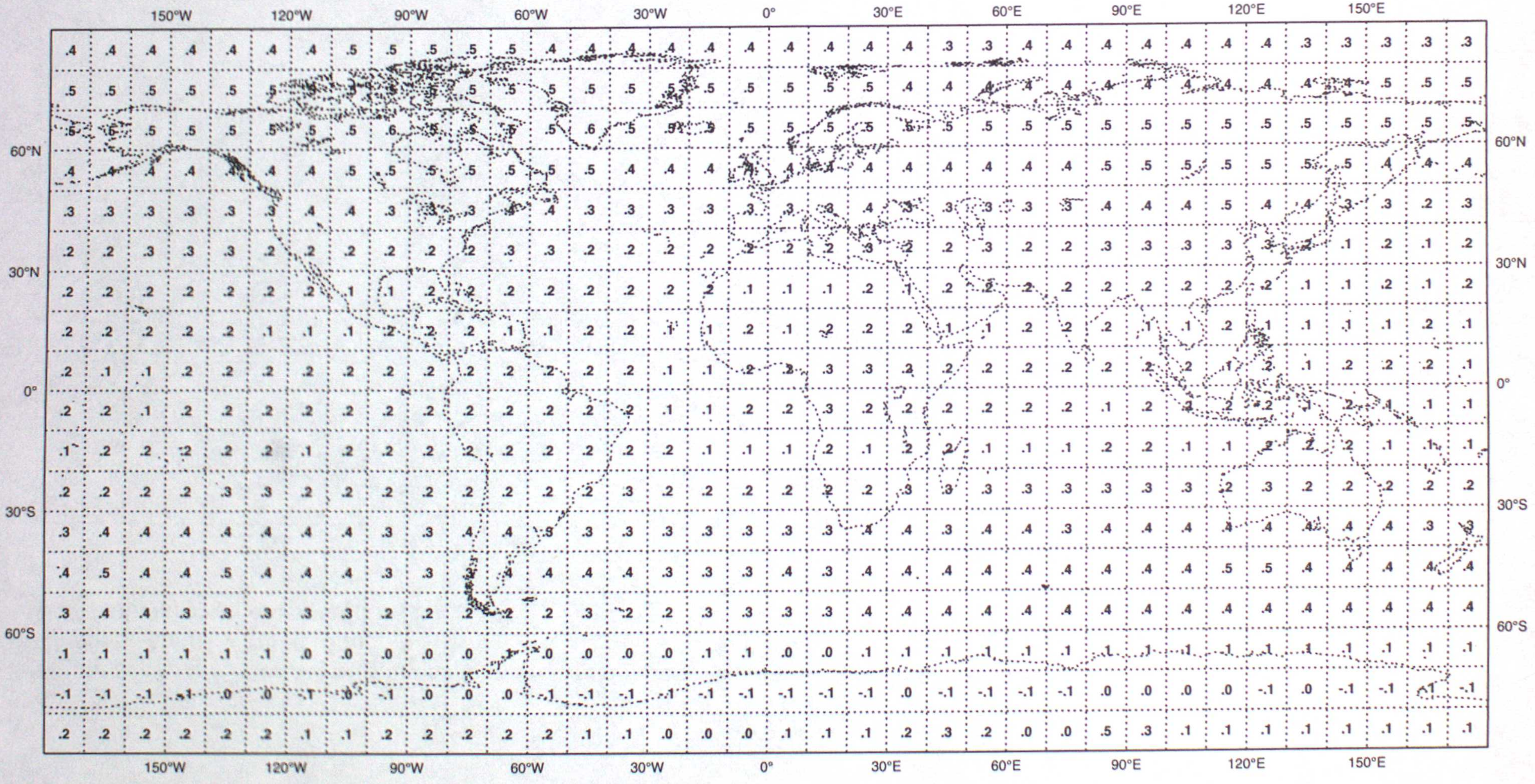

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S

Figure 37. ATOVS SD O-B brightness temperature differences (deg C). SEPTEMBER 2004
Channel: AMSUA-7 (300 hPa)
NOAA15, using all observations

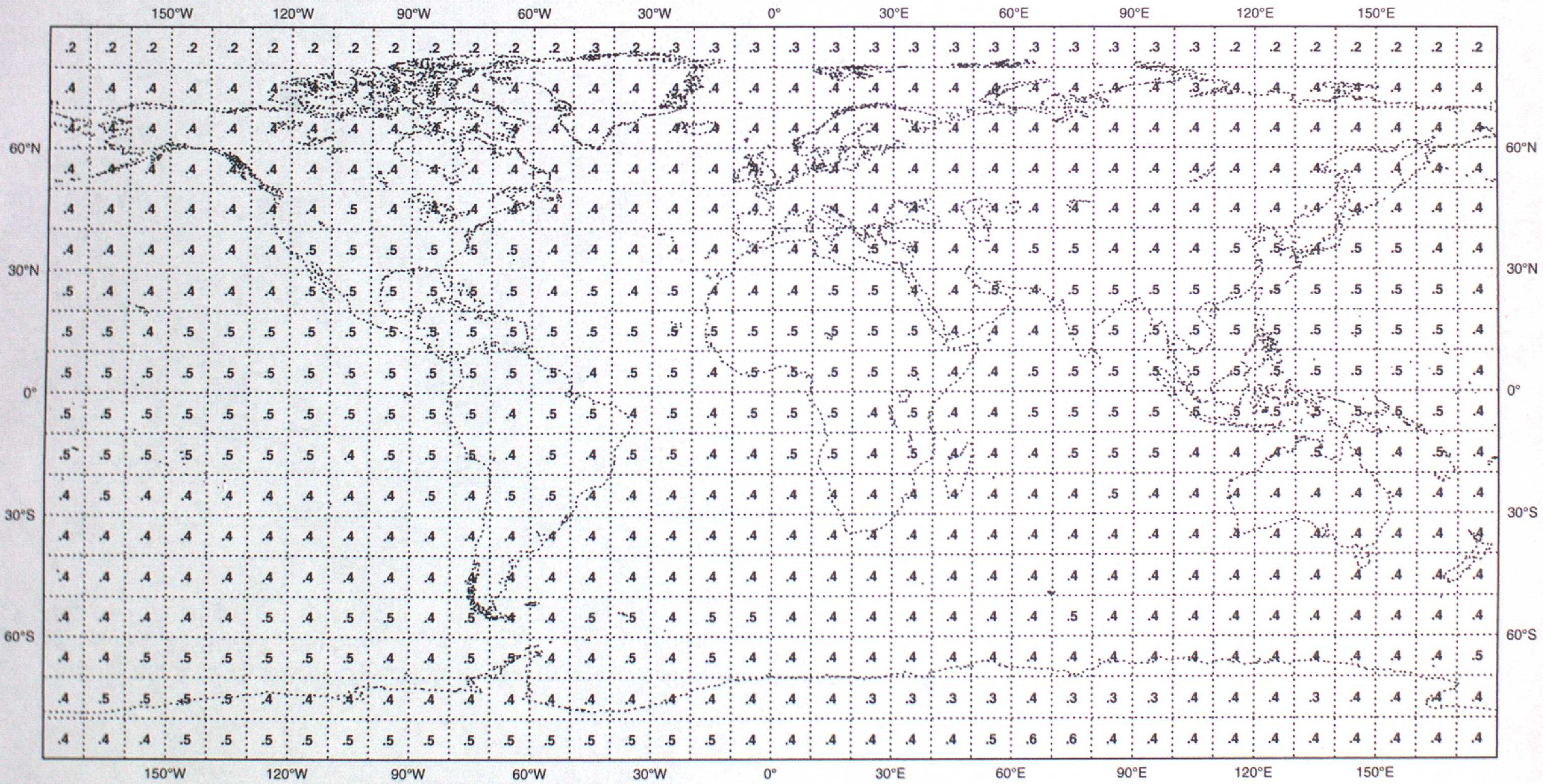

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
.2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .3 .2 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .2 .2 .2 .2 .2 .2 .2
.4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .3 .4 .4 .4 .4 .4 .4 .4
.4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4
.4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4
.4 .4 .4 .4 .4 .4 .4 .5 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4
.4 .4 .4 .4 .4 .4 .5 .5 .5 .5 .5 .5 .4 .4 .4 .4 .4 .4 .4 .4 .5 .4 .4 .4 .5 .5 .4 .4 .4 .5 .5 .4 .5 .5 .4 .4
.5 .4 .4 .4 .4 .4 .5 .5 .5 .5 .5 .5 .4 .5 .4 .5 .4 .4 .4 .5 .5 .4 .4 .5 .4 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .4
.5 .5 .4 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .4 .4 .4 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .4
.5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .4 .5 .5 .4 .5 .5 .5 .5 .5 .4 .4 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .4
.5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .4 .5 .5 .4 .5 .4 .5 .5 .5 .4 .5 .4 .4 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .4
.5 .5 .5 .5 .5 .5 .5 .4 .5 .5 .5 .4 .5 .4 .5 .5 .4 .4 .5 .5 .4 .5 .4 .4 .4 .5 .5 .5 .4 .4 .4 .5 .4 .4 .5 .4
.4 .5 .4 .4 .4 .4 .4 .4 .4 .5 .4 .5 .5 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .5 .4 .4 .4 .4 .4 .4 .4 .4 .4
.4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4
.4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4
.4 .4 .4 .4 .4 .5 .4 .5 .5 .4 .5 .4 .4 .5 .5 .4 .5 .5 .4 .4 .4 .4 .4 .4 .4 .5 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4
.4 .4 .5 .5 .5 .5 .5 .5 .4 .4 .5 .5 .4 .4 .5 .4 .5 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .5
.4 .5 .5 .5 .5 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .3 .3 .3 .3 .4 .3 .3 .3 .4 .4 .4 .3 .4 .4 .4 .4
.4 .4 .4 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .4 .4 .4 .4 .4 .4 .5 .6 .6 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4

Figure 38. ATOVS MEAN O-B brightness temperature differences (deg C). SEPTEMBER 2004
Channel: AMSUA-9 (100 hPa)
NOAA15, using all observations

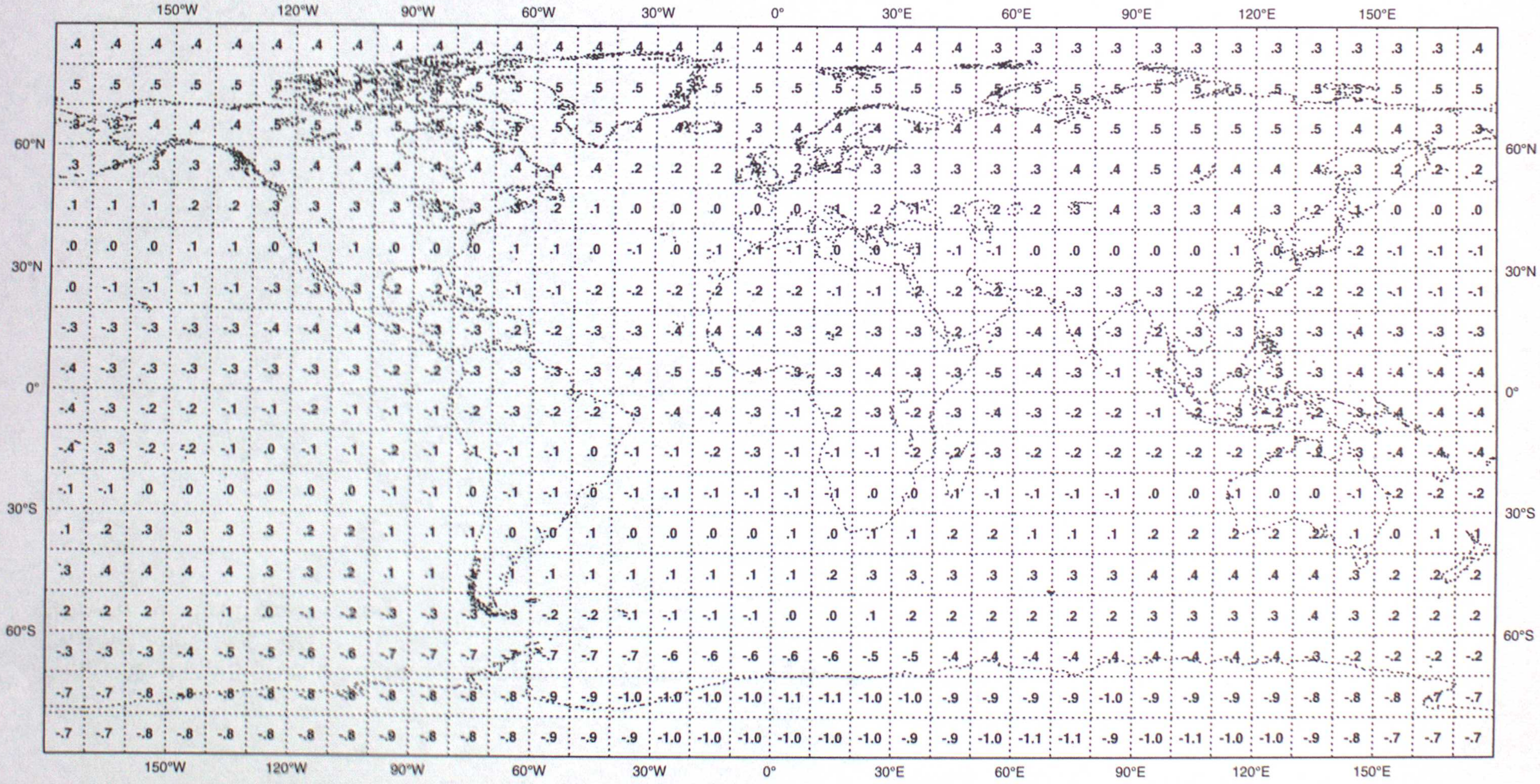

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
.4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .4
.5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5
.3 .3 .4 .4 .4 .5 .5 .5 .5 .5 .5 .5 .5 .5 .4 .4 .3 .3 .4 .4 .4 .4 .4 .4 .4 .5 .5 .5 .5 .5 .5 .5 .4 .4 .3 .3
.3 .3 .3 .3 .3 .3 .4 .4 .4 .4 .4 .4 .4 .4 .2 .2 .2 .2 .2 .2 .3 .3 .3 .3 .3 .4 .4 .5 .4 .4 .4 .4 .3 .2 .2 .2
.1 .1 .1 .2 .2 .3 .3 .3 .3 .3 .3 .3 .2 .1 .0 .0 .0 .0 .0 .1 .2 .1 .2 .2 .2 .3 .4 .3 .3 .4 .3 .2 .1 .0 .0 .0
.0 .0 .0 .1 .1 .0 .1 .1 .0 .0 .0 .1 .1 .0 -.1 .0 -.1 -.1 -.1 .0 .0 -.1 -.1 -.1 .0 .0 .0 .0 .0 .1 .0 -.1 -.2 -.1 -.1 -.1
.0 -.1 -.1 -.1 -.1 -.3 -.3 -.3 -.2 -.2 -.2 -.1 -.1 -.2 -.2 -.2 -.2 -.2 -.2 -.1 -.1 -.2 -.2 -.2 -.2 -.3 -.3 -.3 -.2 -.2 -.2 -.2 -.2 -.1 -.1 -.1
-.3 -.3 -.3 -.3 -.3 -.4 -.4 -.4 -.3 -.3 -.3 -.2 -.2 -.3 -.3 -.4 -.4 -.4 -.3 -.2 -.3 -.3 -.2 -.3 -.4 -.4 -.3 -.2 -.3 -.3 -.3 -.3 -.4 -.3 -.3 -.3
-.4 -.3 -.3 -.3 -.3 -.3 -.3 -.3 -.2 -.2 -.3 -.3 -.3 -.3 -.4 -.5 -.5 -.4 -.3 -.3 -.4 -.3 -.3 -.5 -.4 -.3 -.1 -.1 -.3 -.3 -.3 -.3 -.4 -.4 -.4 -.4
-.4 -.3 -.2 -.2 -.1 -.1 -.2 -.1 -.1 -.1 -.2 -.3 -.2 -.2 -.3 -.4 -.4 -.3 -.1 -.2 -.3 -.2 -.3 -.4 -.3 -.2 -.2 -.1 -.2 -.3 -.2 -.2 -.3 -.4 -.4 -.4
-.4 -.3 -.2 -.2 -.1 .0 -.1 -.1 -.2 -.1 -.1 -.1 -.1 .0 -.1 -.1 -.2 -.3 -.1 -.1 -.1 -.2 -.2 -.3 -.2 -.2 -.2 -.2 -.2 -.2 -.2 -.2 -.3 -.4 -.4 -.4
-.1 -.1 .0 .0 .0 .0 .0 .0 -.1 -.1 .0 -.1 -.1 .0 -.1 -.1 -.1 -.1 -.1 -.1 .0 .0 -.1 -.1 -.1 -.1 -.1 .0 .0 .1 .0 .0 -.1 -.2 -.2 -.2
.1 .2 .3 .3 .3 .3 .2 .2 .1 .1 .1 .0 .0 .1 .0 .0 .0 .0 .1 .0 .1 .1 .2 .2 .1 .1 .1 .2 .2 .2 .2 .2 .1 .0 .1 .1
.3 .4 .4 .4 .4 .3 .3 .2 .1 .1 .1 .1 .1 .1 .1 .1 .1 .1 .1 .2 .3 .3 .3 .3 .3 .3 .3 .4 .4 .4 .4 .4 .3 .2 .2 .2
.2 .2 .2 .2 .1 .0 -.1 -.2 -.3 -.3 -.3 -.3 -.2 -.2 -.1 -.1 -.1 -.1 .0 .0 .1 .2 .2 .2 .2 .2 .2 .3 .3 .3 .3 .4 .3 .2 .2 .2
-.3 -.3 -.3 -.4 -.5 -.5 -.6 -.6 -.7 -.7 -.7 -.7 -.7 -.7 -.7 -.6 -.6 -.6 -.6 -.6 -.5 -.5 -.4 -.4 -.4 -.4 -.4 -.4 -.4 -.4 -.4 -.3 -.2 -.2 -.2 -.2
-.7 -.7 -.8 -.8 -.8 -.8 -.8 -.8 -.8 -.8 -.8 -.8 -.9 -.9 -1.0 -1.0 -1.0 -1.0 -1.1 -1.1 -1.0 -1.0 -.9 -.9 -.9 -.9 -1.0 -.9 -.9 -.9 -.9 -.8 -.8 -.8 -.7 -.7
-.7 -.7 -.8 -.8 -.8 -.8 -.8 -.8 -.9 -.8 -.8 -.8 -.9 -.9 -.9 -1.0 -1.0 -1.0 -1.0 -1.0 -1.0 -.9 -.9 -1.0 -1.1 -1.1 -.9 -1.0 -1.1 -1.0 -1.0 -.9 -.8 -.7 -.7 -.7

Figure 39. ATOVS SD O-B brightness temperature differences (deg C). SEPTEMBER 2004
Channel: AMSUA-9 (100 hPa)
NOAA15, using all observations

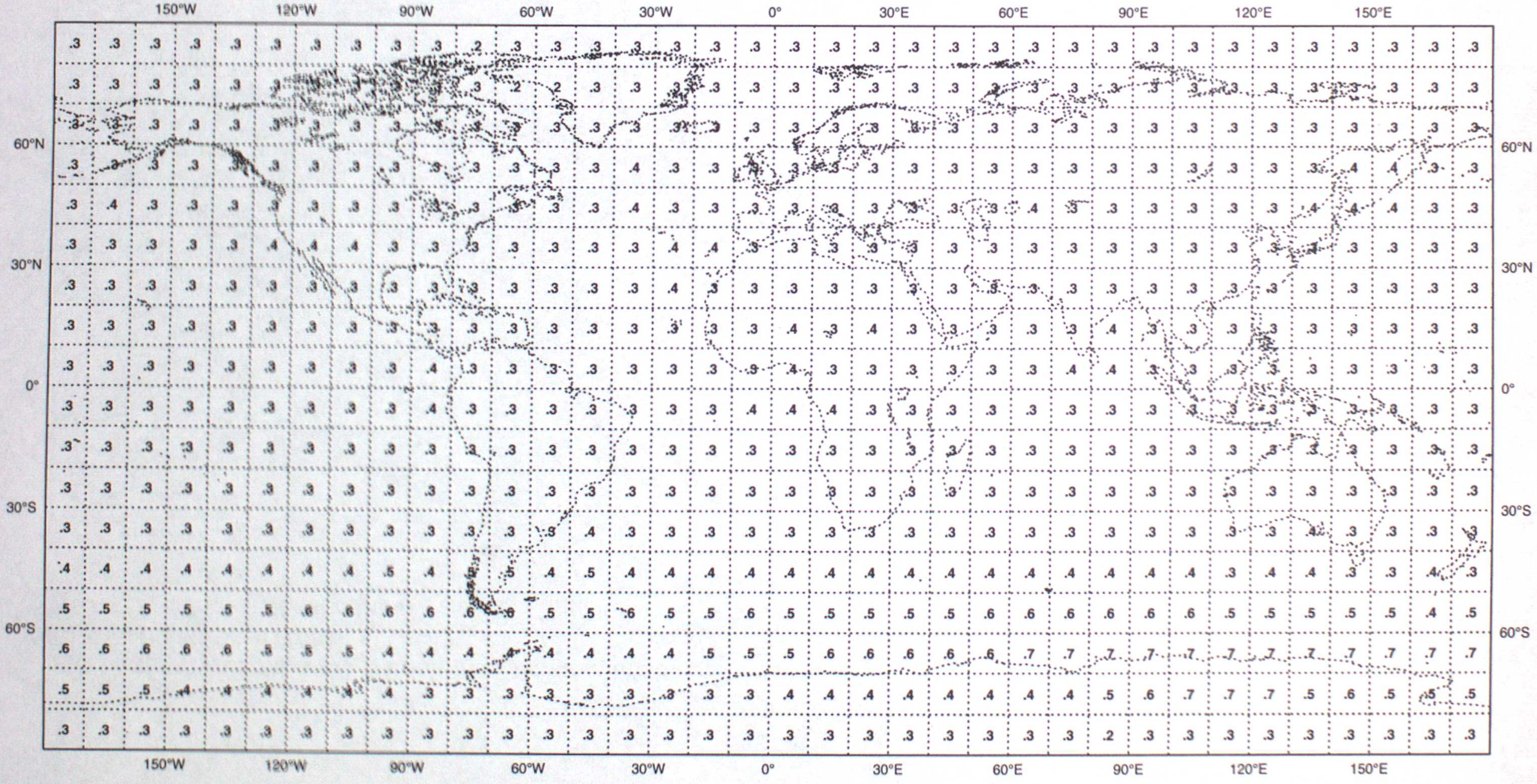

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S

Figure 40. ATOVS mean daily count. SEPTEMBER 2004
NOAA16, using all observations
Global average number of observations in 24 hours = 556398

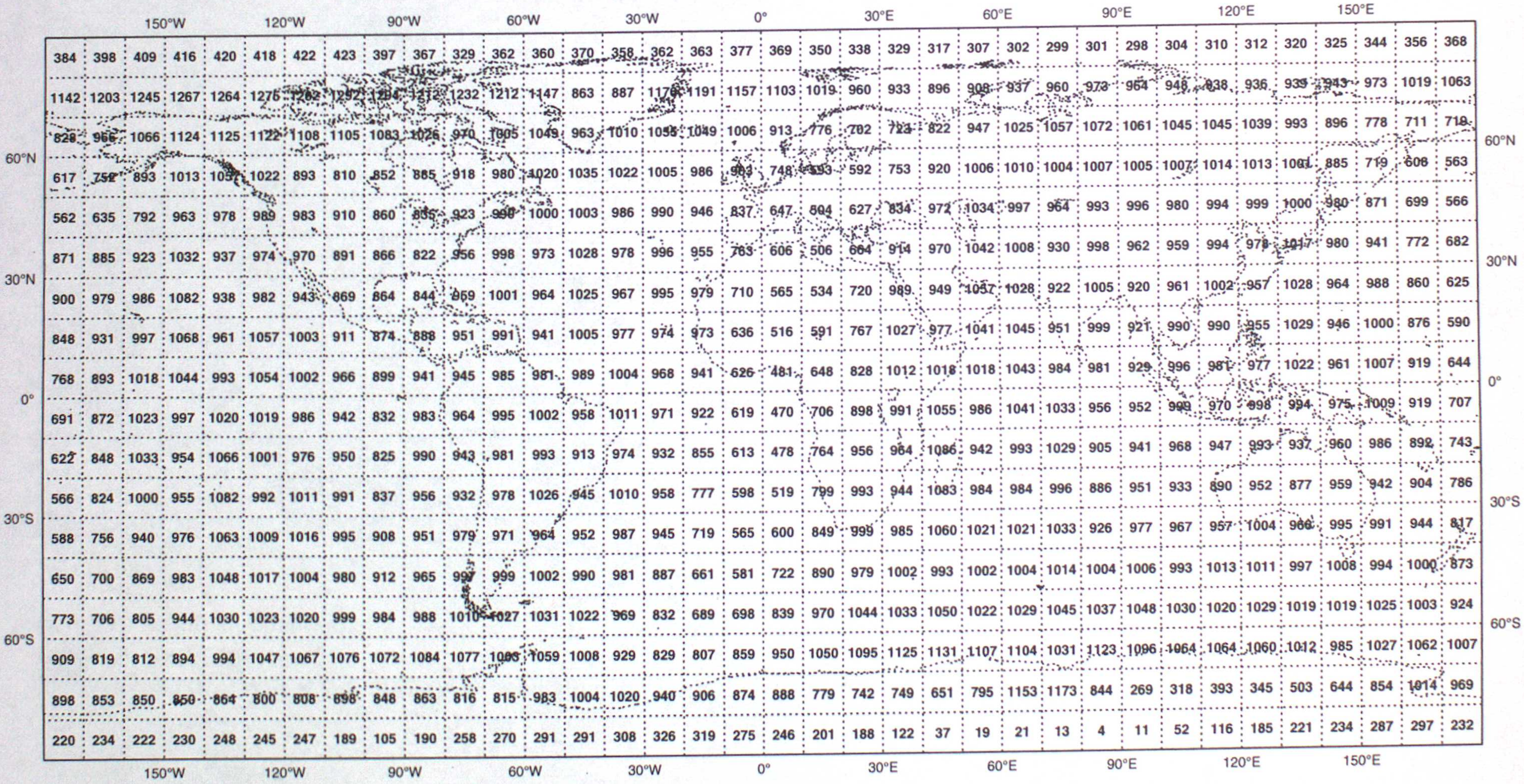
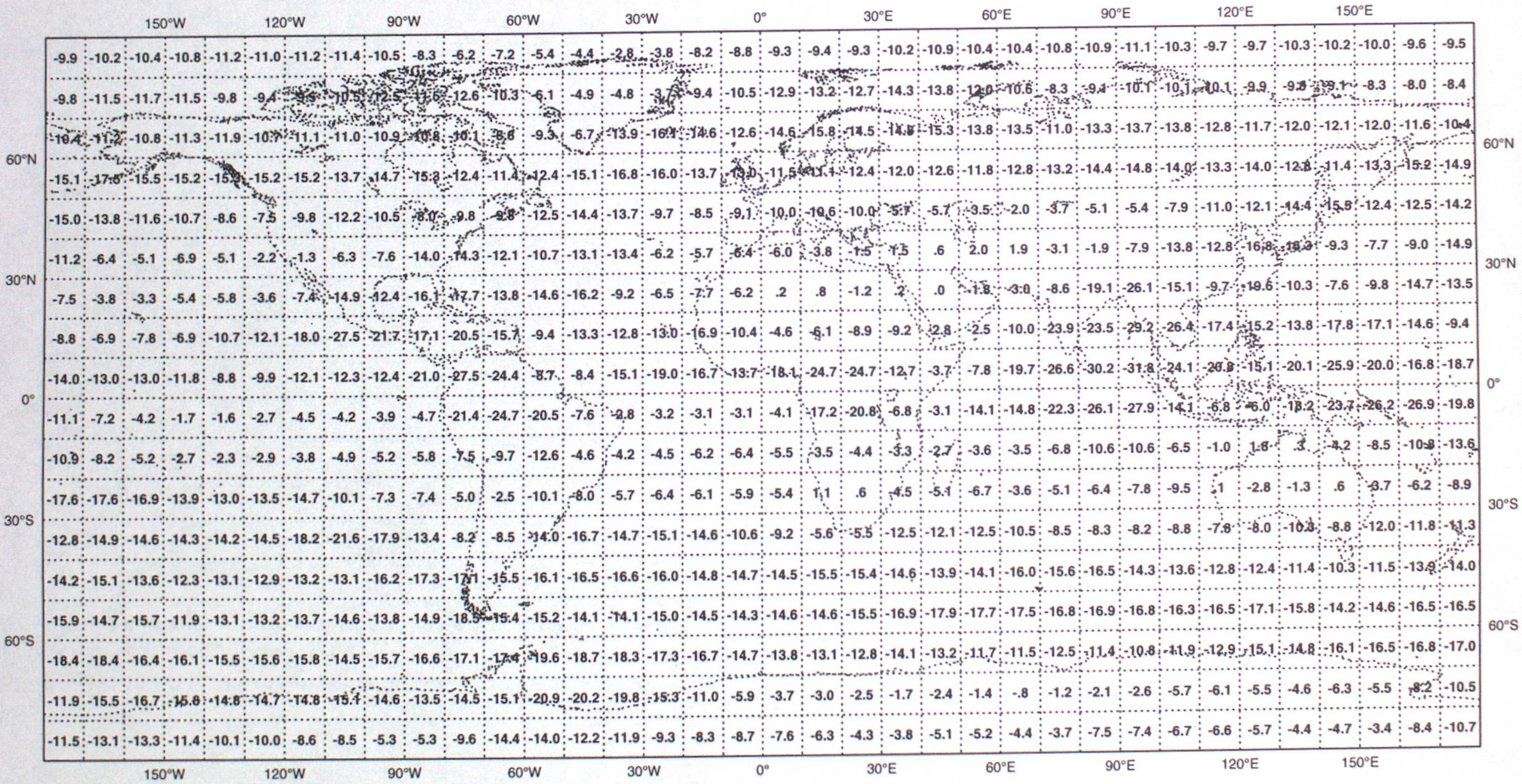
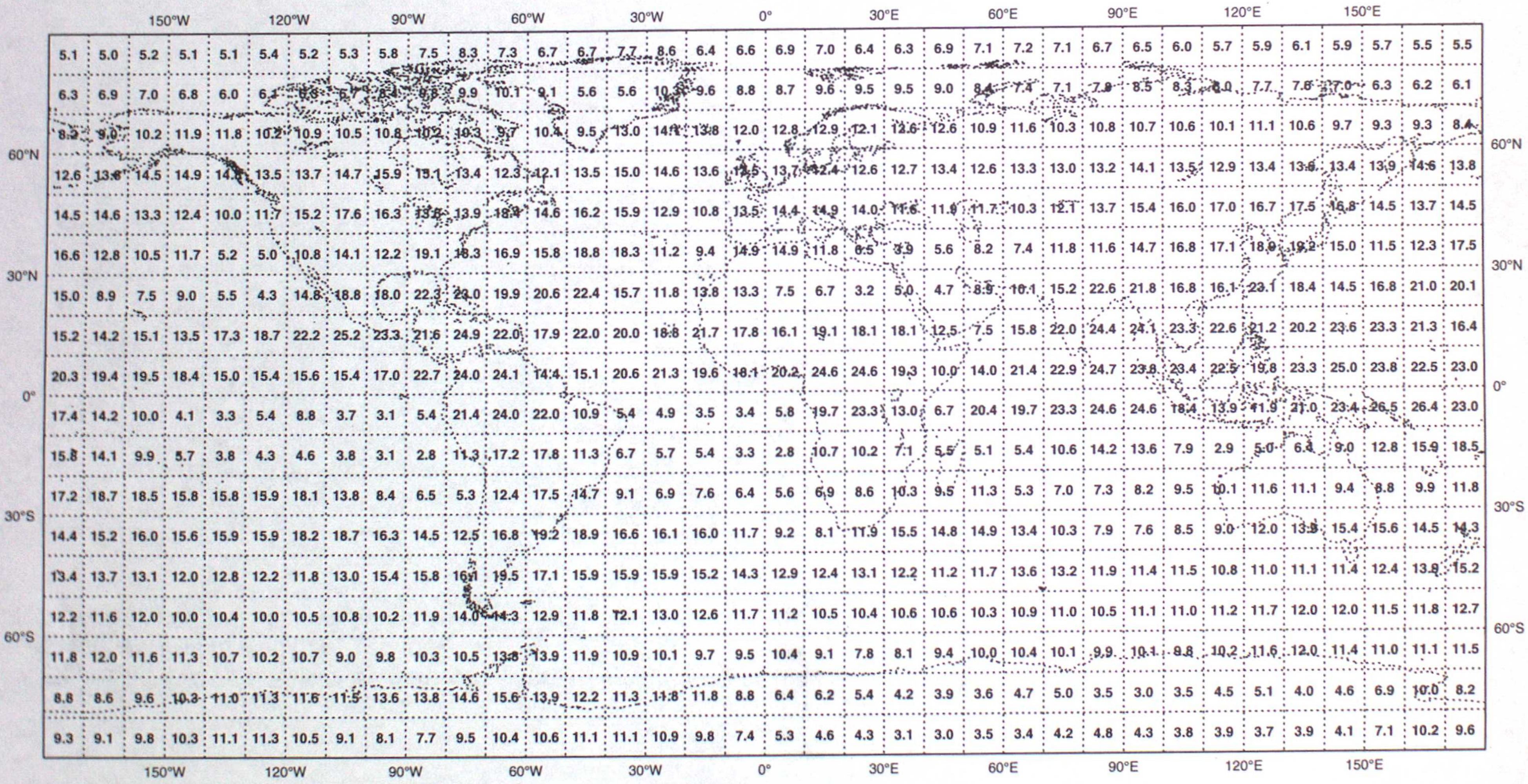

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
384 398 409 416 420 418 422 423 397 367 329 362 360 370 358 362 363 377 369 350 338 329 317 307 302 299 301 298 304 310 312 320 325 344 356 368
1142 1203 1245 1267 1264 1276 1262 1292 1294 1212 1232 1212 1147 863 887 1176 1191 1157 1103 1019 960 933 896 908 937 960 973 964 948 838 936 939 943 973 1019 1063
828 966 1066 1124 1125 1122 1108 1105 1083 1026 970 1005 1049 963 1010 1055 1049 1006 913 776 702 723 822 947 1025 1057 1072 1061 1045 1045 1039 993 896 778 711 718
617 752 893 1013 1057 1022 893 810 852 885 918 980 1020 1035 1022 1005 986 903 748 593 592 753 920 1006 1010 1004 1007 1005 1007 1014 1013 1001 885 719 608 563
562 635 792 963 978 989 983 910 860 835 923 990 1000 1003 986 990 946 837 647 604 627 834 972 1034 997 964 993 996 980 994 999 1000 980 871 699 566
871 885 923 1032 937 974 970 891 866 822 956 998 973 1028 978 996 955 763 606 506 664 914 970 1042 1008 930 998 962 959 994 978 1017 980 941 772 682
900 979 986 1082 938 982 943 869 864 844 969 1001 964 1025 967 995 979 710 565 534 720 989 949 1057 1028 922 1005 920 961 1002 957 1028 964 988 860 625
848 931 997 1068 961 1057 1003 911 874 888 951 991 941 1005 977 974 973 636 516 591 767 1027 977 1041 1045 951 999 921 990 990 955 1029 946 1000 876 590
768 893 1018 1044 993 1054 1002 966 899 941 945 985 981 989 1004 968 941 626 481 648 828 1012 1018 1018 1043 984 981 929 996 981 977 1022 961 1007 919 644
691 872 1023 997 1020 1019 986 942 832 983 964 995 1002 958 1011 971 922 619 470 706 898 991 1055 986 1041 1033 956 952 999 970 998 994 975 1009 919 707
622 848 1033 954 1066 1001 976 950 825 990 943 981 993 913 974 932 855 613 478 764 956 964 1086 942 993 1029 905 941 968 947 993 937 960 986 892 743
566 824 1000 955 1082 992 1011 991 837 956 932 978 1026 945 1010 958 777 598 519 799 993 944 1083 984 984 996 886 951 933 890 952 877 959 942 904 786
588 756 940 976 1063 1009 1016 995 908 951 979 971 964 952 987 945 719 565 600 849 999 985 1060 1021 1021 1033 926 977 967 957 1004 986 995 991 944 817
650 700 869 983 1048 1017 1004 980 912 965 997 999 1002 990 981 887 661 581 722 890 979 1002 993 1002 1004 1014 1004 1006 993 1013 1011 997 1008 994 1000 873
773 706 805 944 1030 1023 1020 999 984 988 1010 1027 1031 1022 969 832 689 698 839 970 1044 1033 1050 1022 1029 1045 1037 1048 1030 1020 1029 1019 1019 1025 1003 924
909 819 812 894 994 1047 1067 1076 1072 1084 1077 1086 1059 1008 929 829 807 859 950 1050 1095 1125 1131 1107 1104 1031 1123 1096 1064 1064 1060 1012 985 1027 1062 1007
898 853 850 850 864 800 808 898 848 863 816 815 983 1004 1020 940 906 874 888 779 742 749 651 795 1153 1173 844 269 318 393 345 503 644 854 1014 969
220 234 222 230 248 245 247 189 105 190 258 270 291 291 308 326 319 275 246 201 188 122 37 19 21 13 4 11 52 116 185 221 234 287 297 232

Figure 41. ATOVS MEAN O-B brightness temperature differences (deg C). SEPTEMBER 2004
Channel: HIRS8 (Surface)
NOAA16, using all observations



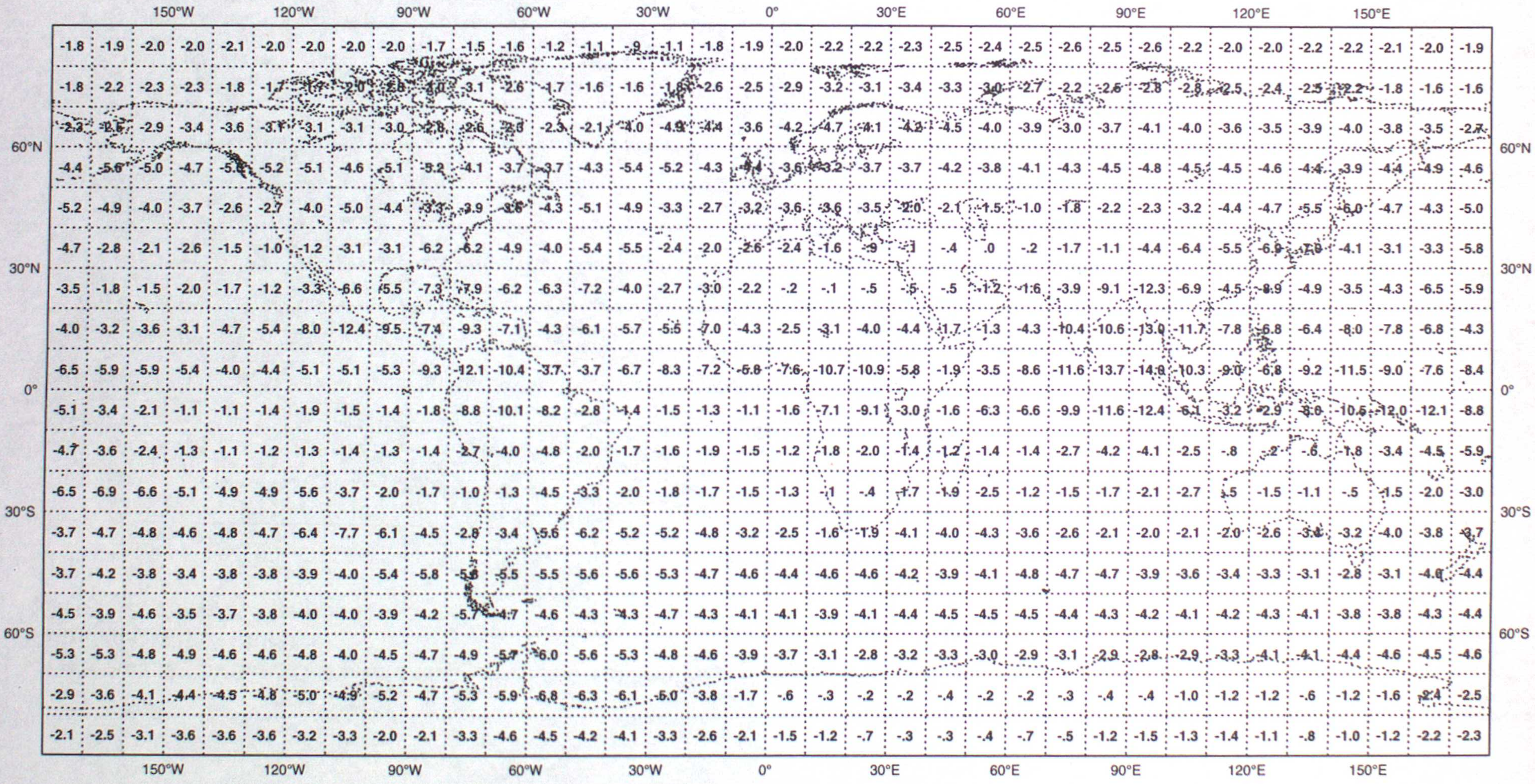
-9.9	-10.2	-10.4	-10.8	-11.2	-11.0	-11.2	-11.4	-10.5	-8.3	-6.2	-7.2	-5.4	-4.4	-2.8	-3.8	-8.2	-8.8	-9.3	-9.4	-9.3	-10.2	-10.9	-10.4	-10.4	-10.8	-10.9	-11.1	-10.3	-9.7	-9.7	-10.3	-10.2	-10.0	-9.6	-9.5
-9.8	-11.5	-11.7	-11.5	-9.8	-9.4	-9.5	-10.5	-12.5	-11.6	-12.6	-10.3	-6.1	-4.9	-4.8	-3.7	-9.4	-10.5	-12.9	-13.2	-12.7	-14.3	-13.8	-12.0	-10.6	-8.3	-9.4	-10.1	-10.1	-10.1	-9.9	-9.8	-9.1	-8.3	-8.0	-8.4
-10.4	-11.2	-10.8	-11.3	-11.9	-10.7	-11.1	-11.0	-10.9	-10.8	-10.1	-8.6	-9.3	-6.7	-13.9	-16.1	-14.6	-12.6	-14.6	-15.8	-14.5	-14.8	-15.3	-13.8	-13.5	-11.0	-13.3	-13.7	-13.8	-12.8	-11.7	-12.0	-12.1	-12.0	-11.6	-10.4
-15.1	-17.6	-15.5	-15.2	-15.3	-15.2	-15.2	-13.7	-14.7	-15.3	-12.4	-11.4	-12.4	-15.1	-16.8	-16.0	-13.7	-13.0	-11.5	-11.1	-12.4	-12.0	-12.6	-11.8	-12.8	-13.2	-14.4	-14.8	-14.0	-13.3	-14.0	-12.8	-11.4	-13.3	-15.2	-14.9
-15.0	-13.8	-11.6	-10.7	-8.6	-7.5	-9.8	-12.2	-10.5	-8.0	-9.8	-9.8	-12.5	-14.4	-13.7	-9.7	-8.5	-9.1	-10.0	-10.6	-10.0	-5.7	-5.7	-3.5	-2.0	-3.7	-5.1	-5.4	-7.9	-11.0	-12.1	-14.4	-15.5	-12.4	-12.5	-14.2
-11.2	-6.4	-5.1	-6.9	-5.1	-2.2	-1.3	-6.3	-7.6	-14.0	-14.3	-12.1	-10.7	-13.1	-13.4	-6.2	-5.7	-6.4	-6.0	-3.8	-1.5	1.5	.6	2.0	1.9	-3.1	-1.9	-7.9	-13.8	-12.8	-16.8	-18.3	-9.3	-7.7	-9.0	-14.9
-7.5	-3.8	-3.3	-5.4	-5.8	-3.6	-7.4	-14.9	-12.4	-16.1	-17.7	-13.8	-14.6	-16.2	-9.2	-6.5	-7.7	-6.2	.2	.8	-1.2	.2	.0	-1.8	-3.0	-8.6	-19.1	-26.1	-15.1	-9.7	-19.6	-10.3	-7.6	-9.8	-14.7	-13.5
-8.8	-6.9	-7.8	-6.9	-10.7	-12.1	-18.0	-27.5	-21.7	-17.1	-20.5	-15.7	-9.4	-13.3	-12.8	-13.0	-16.9	-10.4	-4.6	-6.1	-8.9	-9.2	-2.8	-2.5	-10.0	-23.9	-23.5	-29.2	-26.4	-17.4	-15.2	-13.8	-17.8	-17.1	-14.6	-9.4
-14.0	-13.0	-13.0	-11.8	-8.8	-9.9	-12.1	-12.3	-12.4	-21.0	-27.5	-24.4	-8.7	-8.4	-15.1	-19.0	-16.7	-13.7	-18.1	-24.7	-24.7	-12.7	-3.7	-7.8	-19.7	-26.6	-30.2	-31.8	-24.1	-20.8	-15.1	-20.1	-25.9	-20.0	-16.8	-18.7
-11.1	-7.2	-4.2	-1.7	-1.6	-2.7	-4.5	-4.2	-3.9	-4.7	-21.4	-24.7	-20.5	-7.6	-2.8	-3.2	-3.1	-3.1	-4.1	-17.2	-20.8	-6.8	-3.1	-14.1	-14.8	-22.3	-26.1	-27.9	-14.1	-6.8	-6.0	-18.2	-23.7	-26.2	-26.9	-19.8
-10.9	-8.2	-5.2	-2.7	-2.3	-2.9	-3.8	-4.9	-5.2	-5.8	-7.5	-9.7	-12.6	-4.6	-4.2	-4.5	-6.2	-6.4	-5.5	-3.5	-4.4	-3.3	-2.7	-3.6	-3.5	-6.8	-10.6	-10.6	-6.5	-1.0	1.8	.3	-4.2	-8.5	-10.8	-13.6
-17.6	-17.6	-16.9	-13.9	-13.0	-13.5	-14.7	-10.1	-7.3	-7.4	-5.0	-2.5	-10.1	-8.0	-5.7	-6.4	-6.1	-5.9	-5.4	1.1	.6	-4.5	-5.1	-6.7	-3.6	-5.1	-6.4	-7.8	-9.5	.1	-2.8	-1.3	.6	-3.7	-6.2	-8.9
-12.8	-14.9	-14.6	-14.3	-14.2	-14.5	-18.2	-21.6	-17.9	-13.4	-8.2	-8.5	-14.0	-16.7	-14.7	-15.1	-14.6	-10.6	-9.2	-5.6	-5.5	-12.5	-12.1	-12.5	-10.5	-8.5	-8.3	-8.2	-8.8	-7.8	-8.0	-10.3	-8.8	-12.0	-11.8	-11.3
-14.2	-15.1	-13.6	-12.3	-13.1	-12.9	-13.2	-13.1	-16.2	-17.3	-17.1	-15.5	-16.1	-16.5	-16.6	-16.0	-14.8	-14.7	-14.5	-15.5	-15.4	-14.6	-13.9	-14.1	-16.0	-15.6	-16.5	-14.3	-13.6	-12.8	-12.4	-11.4	-10.3	-11.5	-13.9	-14.0
-15.9	-14.7	-15.7	-11.9	-13.1	-13.2	-13.7	-14.6	-13.8	-14.9	-18.5	-15.4	-15.2	-14.1	-14.1	-15.0	-14.5	-14.3	-14.6	-14.6	-15.5	-16.9	-17.9	-17.7	-17.5	-16.8	-16.9	-16.8	-16.3	-16.5	-17.1	-15.8	-14.2	-14.6	-16.5	-16.5
-18.4	-18.4	-16.4	-16.1	-15.5	-15.6	-15.8	-14.5	-15.7	-16.6	-17.1	-17.4	-19.6	-18.7	-18.3	-17.3	-16.7	-14.7	-13.8	-13.1	-12.8	-14.1	-13.2	-11.7	-11.5	-12.5	-11.4	-10.8	-11.9	-12.9	-15.1	-14.8	-16.1	-16.5	-16.8	-17.0
-11.9	-15.5	-16.7	-15.8	-14.8	-14.7	-14.8	-15.1	-14.6	-13.5	-14.5	-15.1	-20.9	-20.2	-19.8	-15.3	-11.0	-5.9	-3.7	-3.0	-2.5	-1.7	-2.4	-1.4	-.8	-1.2	-2.1	-2.6	-5.7	-6.1	-5.5	-4.6	-6.3	-5.5	-8.2	-10.5
-11.5	-13.1	-13.3	-11.4	-10.1	-10.0	-8.6	-8.5	-5.3	-5.3	-9.6	-14.4	-14.0	-12.2	-11.9	-9.3	-8.3	-8.7	-7.6	-6.3	-4.3	-3.8	-5.1	-5.2	-4.4	-3.7	-7.5	-7.4	-6.7	-6.6	-5.7	-4.4	-4.7	-3.4	-8.4	-10.7

Figure 42. ATOVS SD O-B brightness temperature differences (deg C). SEPTEMBER 2004
Channel: HIRS8 (Surface)
NOAA16, using all observations



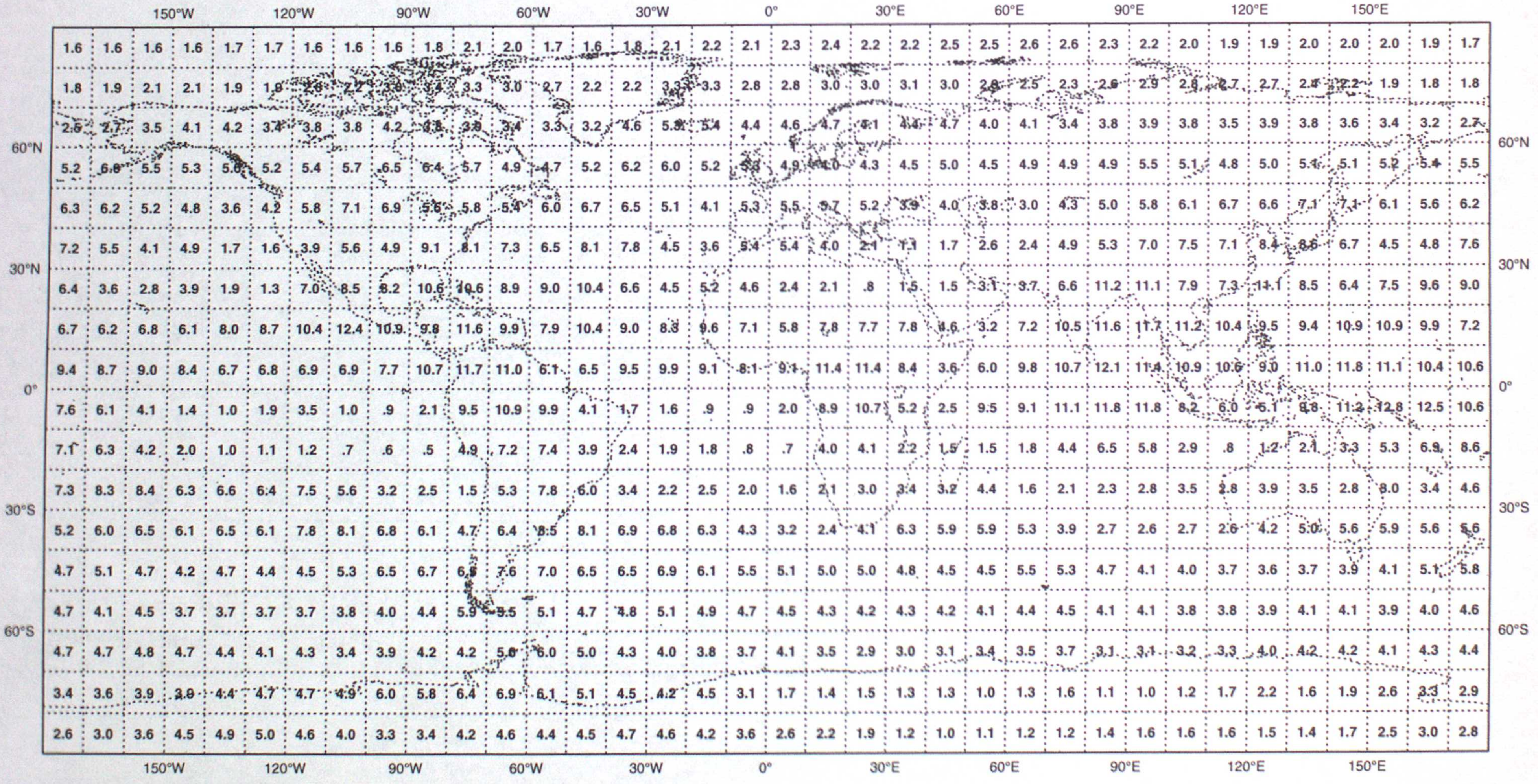
5.1	5.0	5.2	5.1	5.1	5.4	5.2	5.3	5.8	7.5	8.3	7.3	6.7	6.7	7.7	8.6	6.4	6.6	6.9	7.0	6.4	6.3	6.9	7.1	7.2	7.1	6.7	6.5	6.0	5.7	5.9	6.1	5.9	5.7	5.5	5.5
6.3	6.9	7.0	6.8	6.0	6.1	6.8	5.7	8.4	8.8	9.9	10.1	9.1	5.6	5.6	10.3	9.6	8.8	8.7	9.6	9.5	9.5	9.0	8.4	7.4	7.1	7.8	8.5	8.3	8.0	7.7	7.6	7.0	6.3	6.2	6.1
8.2	9.0	10.2	11.9	11.8	10.2	10.9	10.5	10.8	10.2	10.3	9.7	10.4	9.5	13.0	14.1	13.8	12.0	12.8	12.9	12.1	12.6	12.6	10.9	11.6	10.3	10.8	10.7	10.6	10.1	11.1	10.6	9.7	9.3	9.3	8.4
12.6	13.8	14.5	14.9	14.8	13.5	13.7	14.7	15.9	15.1	13.4	12.3	12.1	13.5	15.0	14.6	13.6	13.5	13.7	12.4	12.6	12.7	13.4	12.6	13.3	13.0	13.2	14.1	13.5	12.9	13.4	13.6	13.4	13.9	14.6	13.8
14.5	14.6	13.3	12.4	10.0	11.7	15.2	17.6	16.3	13.6	13.9	18.4	14.6	16.2	15.9	12.9	10.8	13.5	14.4	14.9	14.0	11.6	11.9	11.7	10.3	12.1	13.7	15.4	16.0	17.0	16.7	17.5	16.8	14.5	13.7	14.5
16.6	12.8	10.5	11.7	5.2	5.0	10.8	14.1	12.2	19.1	18.3	16.9	15.8	18.8	18.3	11.2	9.4	14.9	14.9	11.8	6.5	3.9	5.6	8.2	7.4	11.8	11.6	14.7	16.8	17.1	18.9	19.2	15.0	11.5	12.3	17.5
15.0	8.9	7.5	9.0	5.5	4.3	14.8	18.8	18.0	22.3	23.0	19.9	20.6	22.4	15.7	11.8	13.8	13.3	7.5	6.7	3.2	5.0	4.7	8.9	10.1	15.2	22.6	21.8	16.8	16.1	23.1	18.4	14.5	16.8	21.0	20.1
15.2	14.2	15.1	13.5	17.3	18.7	22.2	25.2	23.3	21.6	24.9	22.0	17.9	22.0	20.0	18.8	21.7	17.8	16.1	19.1	18.1	18.1	12.5	7.5	15.8	22.0	24.4	24.1	23.3	22.6	21.2	20.2	23.6	23.3	21.3	16.4
20.3	19.4	19.5	18.4	15.0	15.4	15.6	15.4	17.0	22.7	24.0	24.1	14.4	15.1	20.6	21.3	19.6	18.1	20.2	24.6	24.6	19.3	10.0	14.0	21.4	22.9	24.7	23.8	23.4	22.5	19.8	23.3	25.0	23.8	22.5	23.0
17.4	14.2	10.0	4.1	3.3	5.4	8.8	3.7	3.1	5.4	21.4	24.0	22.0	10.9	5.4	4.9	3.5	3.4	5.8	19.7	23.3	13.0	6.7	20.4	19.7	23.3	24.6	24.6	18.4	13.9	11.9	21.0	23.4	26.5	26.4	23.0
15.8	14.1	9.9	5.7	3.8	4.3	4.6	3.8	3.1	2.8	11.3	17.2	17.8	11.3	6.7	5.7	5.4	3.3	2.8	10.7	10.2	7.1	5.5	5.1	5.4	10.6	14.2	13.6	7.9	2.9	5.0	6.4	9.0	12.8	15.9	18.5
17.2	18.7	18.5	15.8	15.8	15.9	18.1	13.8	8.4	6.5	5.3	12.4	17.5	14.7	9.1	6.9	7.6	6.4	5.6	6.9	8.6	10.3	9.5	11.3	5.3	7.0	7.3	8.2	9.5	10.1	11.6	11.1	9.4	8.8	9.9	11.8
14.4	15.2	16.0	15.6	15.9	15.9	18.2	18.7	16.3	14.5	12.5	16.8	19.2	18.9	16.6	16.1	16.0	11.7	9.2	8.1	11.9	15.5	14.8	14.9	13.4	10.3	7.9	7.6	8.5	9.0	12.0	13.8	15.4	15.6	14.5	14.3
13.4	13.7	13.1	12.0	12.8	12.2	11.8	13.0	15.4	15.8	16.1	19.5	17.1	15.9	15.9	15.9	15.2	14.3	12.9	12.4	13.1	12.2	11.2	11.7	13.6	13.2	11.9	11.4	11.5	10.8	11.0	11.1	11.4	12.4	13.8	15.2
12.2	11.6	12.0	10.0	10.4	10.0	10.5	10.8	10.2	11.9	14.0	14.3	12.9	11.8	12.1	13.0	12.6	11.7	11.2	10.5	10.4	10.6	10.6	10.3	10.9	11.0	10.5	11.1	11.0	11.2	11.7	12.0	12.0	11.5	11.8	12.7
11.8	12.0	11.6	11.3	10.7	10.2	10.7	9.0	9.8	10.3	10.5	13.8	13.9	11.9	10.9	10.1	9.7	9.5	10.4	9.1	7.8	8.1	9.4	10.0	10.4	10.1	9.9	10.1	9.8	10.2	11.6	12.0	11.4	11.0	11.1	11.5
8.8	8.6	9.6	10.3	11.0	11.3	11.6	11.5	13.6	13.8	14.6	15.6	13.9	12.2	11.3	11.8	11.8	8.8	6.4	6.2	5.4	4.2	3.9	3.6	4.7	5.0	3.5	3.0	3.5	4.5	5.1	4.0	4.6	6.9	10.0	8.2
9.3	9.1	9.8	10.3	11.1	11.3	10.5	9.1	8.1	7.7	9.5	10.4	10.6	11.1	11.1	10.9	9.8	7.4	5.3	4.6	4.3	3.1	3.0	3.5	3.4	4.2	4.8	4.3	3.8	3.9	3.7	3.9	4.1	7.1	10.2	9.6

Figure 43. ATOVS MEAN O-B brightness temperature differences (deg C). SEPTEMBER 2004
Channel: HIRS15 (700 hPa)
NOAA16, using all observations



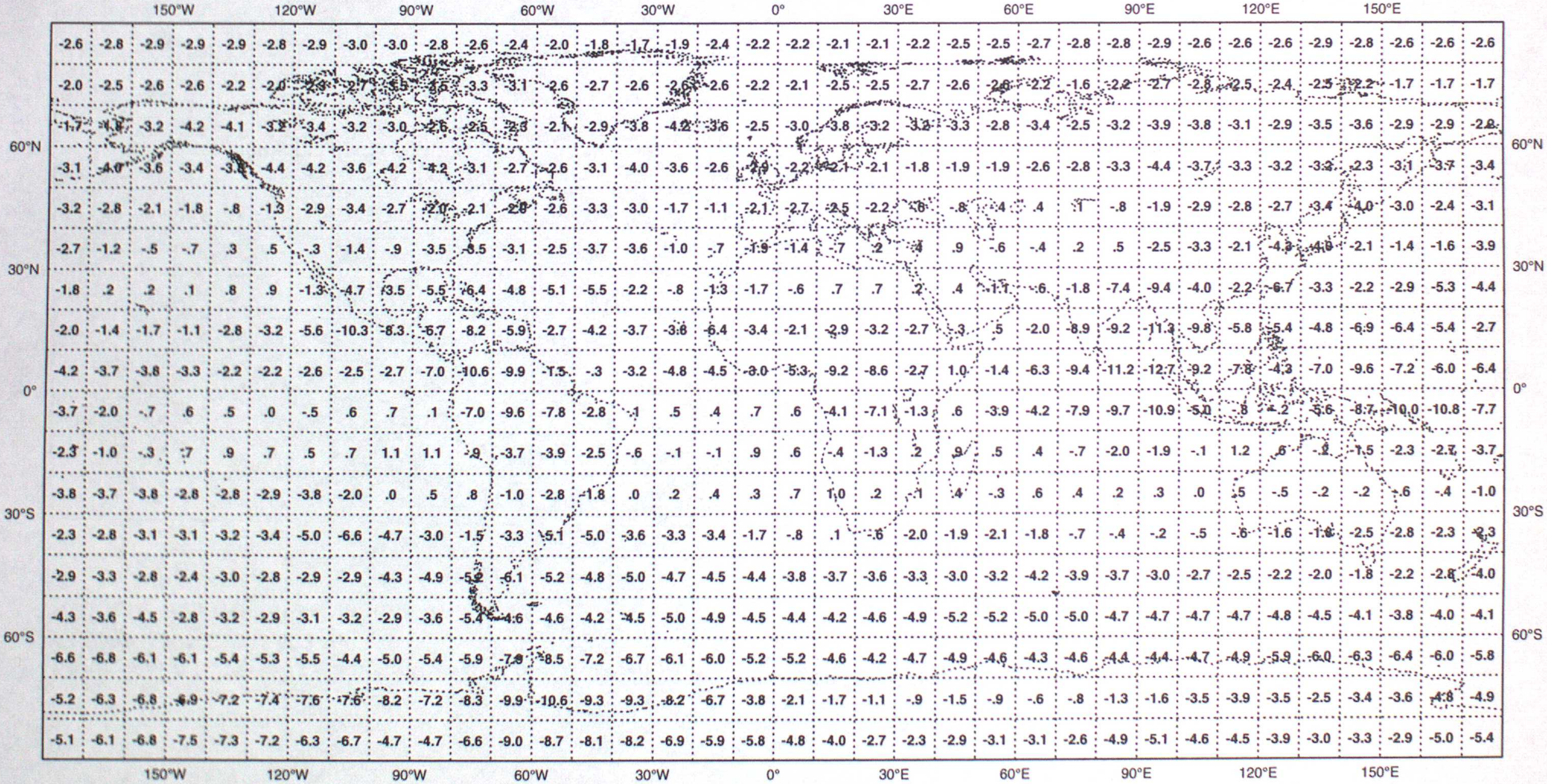
-1.8	-1.9	-2.0	-2.0	-2.1	-2.0	-2.0	-2.0	-2.0	-1.7	-1.5	-1.6	-1.2	-1.1	-.9	-1.1	-1.8	-1.9	-2.0	-2.2	-2.2	-2.3	-2.5	-2.4	-2.5	-2.6	-2.5	-2.6	-2.2	-2.0	-2.0	-2.2	-2.2	-2.1	-2.0	-1.9
-1.8	-2.2	-2.3	-2.3	-1.8	-1.7	-1.7	-2.0	-2.8	-4.0	-3.1	-2.6	-1.7	-1.6	-1.6	-1.8	-2.6	-2.5	-2.9	-3.2	-3.1	-3.4	-3.3	-3.0	-2.7	-2.2	-2.6	-2.8	-2.8	-2.5	-2.4	-2.5	-2.2	-1.8	-1.6	-1.6
-2.3	-2.6	-2.9	-3.4	-3.6	-3.1	-3.1	-3.1	-3.0	-2.8	-2.6	-2.8	-2.3	-2.1	-4.0	-4.9	-4.4	-3.6	-4.2	-4.7	-4.1	-4.2	-4.5	-4.0	-3.9	-3.0	-3.7	-4.1	-4.0	-3.6	-3.5	-3.9	-4.0	-3.8	-3.5	-2.7
-4.4	-5.6	-5.0	-4.7	-5.8	-5.2	-5.1	-4.6	-5.1	-5.2	-4.1	-3.7	-3.7	-4.3	-5.4	-5.2	-4.3	-4.4	-3.6	-3.2	-3.7	-3.7	-4.2	-3.8	-4.1	-4.3	-4.5	-4.8	-4.5	-4.5	-4.6	-4.4	-3.9	-4.4	-4.9	-4.6
-5.2	-4.9	-4.0	-3.7	-2.6	-2.7	-4.0	-5.0	-4.4	-3.3	-3.9	-3.6	-4.3	-5.1	-4.9	-3.3	-2.7	-3.2	-3.6	-3.6	-3.5	-2.0	-2.1	-1.5	-1.0	-1.8	-2.2	-2.3	-3.2	-4.4	-4.7	-5.5	-6.0	-4.7	-4.3	-5.0
-4.7	-2.8	-2.1	-2.6	-1.5	-1.0	-1.2	-3.1	-3.1	-6.2	-6.2	-4.9	-4.0	-5.4	-5.5	-2.4	-2.0	-2.6	-2.4	-1.6	-.9	-.1	-.4	.0	-.2	-1.7	-1.1	-4.4	-6.4	-5.5	-6.9	-7.0	-4.1	-3.1	-3.3	-5.8
-3.5	-1.8	-1.5	-2.0	-1.7	-1.2	-3.3	-6.6	-5.5	-7.3	-7.9	-6.2	-6.3	-7.2	-4.0	-2.7	-3.0	-2.2	-.2	-.1	-.5	-.5	-.5	-1.2	-1.6	-3.9	-9.1	-12.3	-6.9	-4.5	-8.9	-4.9	-3.5	-4.3	-6.5	-5.9
-4.0	-3.2	-3.6	-3.1	-4.7	-5.4	-8.0	-12.4	-9.5	-7.4	-9.3	-7.1	-4.3	-6.1	-5.7	-5.5	-7.0	-4.3	-2.5	-3.1	-4.0	-4.4	-1.7	-1.3	-4.3	-10.4	-10.6	-13.0	-11.7	-7.8	-6.8	-6.4	-8.0	-7.8	-6.8	-4.3
-6.5	-5.9	-5.9	-5.4	-4.0	-4.4	-5.1	-5.1	-5.3	-9.3	-12.1	-10.4	-3.7	-3.7	-6.7	-8.3	-7.2	-5.8	-7.6	-10.7	-10.9	-5.8	-1.9	-3.5	-8.6	-11.6	-13.7	-14.0	-10.3	-9.0	-6.8	-9.2	-11.5	-9.0	-7.6	-8.4
-5.1	-3.4	-2.1	-1.1	-1.1	-1.4	-1.9	-1.5	-1.4	-1.8	-8.8	-10.1	-8.2	-2.8	-1.4	-1.5	-1.3	-1.1	-1.6	-7.1	-9.1	-3.0	-1.6	-6.3	-6.6	-9.9	-11.6	-12.4	-6.1	-3.2	-2.9	-3.0	-10.5	-12.0	-12.1	-8.8
-4.7	-3.6	-2.4	-1.3	-1.1	-1.2	-1.3	-1.4	-1.3	-1.4	-2.7	-4.0	-4.8	-2.0	-1.7	-1.6	-1.9	-1.5	-1.2	-1.8	-2.0	-1.4	-1.2	-1.4	-1.4	-2.7	-4.2	-4.1	-2.5	-.8	-.2	-.6	-1.8	-3.4	-4.5	-5.9
-6.5	-6.9	-6.6	-5.1	-4.9	-4.9	-5.6	-3.7	-2.0	-1.7	-1.0	-1.3	-4.5	-3.3	-2.0	-1.8	-1.7	-1.5	-1.3	-.1	-.4	-1.7	-1.9	-2.5	-1.2	-1.5	-1.7	-2.1	-2.7	-.5	-1.5	-1.1	-.5	-1.5	-2.0	-3.0
-3.7	-4.7	-4.8	-4.6	-4.8	-4.7	-6.4	-7.7	-6.1	-4.5	-2.8	-3.4	-5.6	-6.2	-5.2	-5.2	-4.8	-3.2	-2.5	-1.6	-1.9	-4.1	-4.0	-4.3	-3.6	-2.6	-2.1	-2.0	-2.1	-2.0	-2.6	-3.4	-3.2	-4.0	-3.8	-3.7
-3.7	-4.2	-3.8	-3.4	-3.8	-3.8	-3.9	-4.0	-5.4	-5.8	-5.8	-5.5	-5.5	-5.6	-5.6	-5.3	-4.7	-4.6	-4.4	-4.6	-4.6	-4.2	-3.9	-4.1	-4.8	-4.7	-4.7	-3.9	-3.6	-3.4	-3.3	-3.1	-2.8	-3.1	-4.6	-4.4
-4.5	-3.9	-4.6	-3.5	-3.7	-3.8	-4.0	-4.0	-3.9	-4.2	-5.7	-4.7	-4.6	-4.3	-4.3	-4.7	-4.3	-4.1	-4.1	-3.9	-4.1	-4.4	-4.5	-4.5	-4.5	-4.4	-4.3	-4.2	-4.1	-4.2	-4.3	-4.1	-3.8	-3.8	-4.3	-4.4
-5.3	-5.3	-4.8	-4.9	-4.6	-4.6	-4.8	-4.0	-4.5	-4.7	-4.9	-5.7	-6.0	-5.6	-5.3	-4.8	-4.6	-3.9	-3.7	-3.1	-2.8	-3.2	-3.3	-3.0	-2.9	-3.1	-2.9	-2.8	-2.9	-3.3	-4.1	-4.1	-4.4	-4.6	-4.5	-4.6
-2.9	-3.6	-4.1	-4.4	-4.5	-4.8	-5.0	-4.9	-5.2	-4.7	-5.3	-5.9	-6.8	-6.3	-6.1	-6.0	-3.8	-1.7	-.6	-.3	-.2	-.2	-.4	-.2	-.2	-.3	-.4	-.4	-1.0	-1.2	-1.2	-.6	-1.2	-1.6	-2.4	-2.5
-2.1	-2.5	-3.1	-3.6	-3.6	-3.6	-3.2	-3.3	-2.0	-2.1	-3.3	-4.6	-4.5	-4.2	-4.1	-3.3	-2.6	-2.1	-1.5	-1.2	-.7	-.3	-.3	-.4	-.7	-.5	-1.2	-1.5	-1.3	-1.4	-1.1	-.8	-1.0	-1.2	-2.2	-2.3

Figure 44. ATOVS SD O-B brightness temperature differences (deg C). SEPTEMBER 2004
Channel: HIRS15 (700 hPa)
NOAA16, using all observations



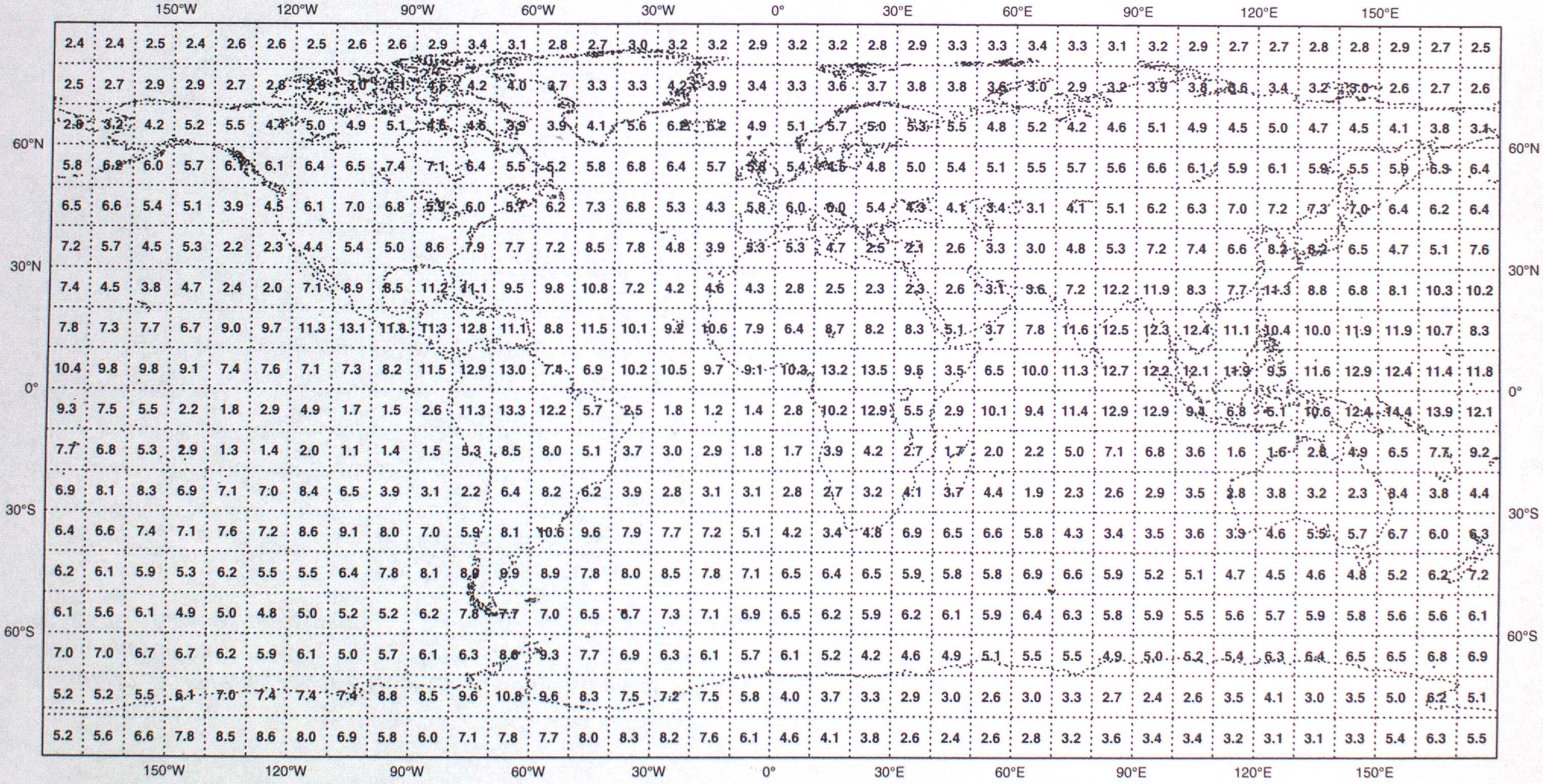
1.6	1.6	1.6	1.6	1.7	1.7	1.6	1.6	1.6	1.8	2.1	2.0	1.7	1.6	1.8	2.1	2.2	2.1	2.3	2.4	2.2	2.2	2.5	2.5	2.6	2.6	2.3	2.2	2.0	1.9	1.9	2.0	2.0	2.0	1.9	1.7
1.8	1.9	2.1	2.1	1.9	1.9	2.6	2.2	3.0	3.4	3.3	3.0	2.7	2.2	2.2	3.3	3.3	2.8	2.8	3.0	3.0	3.1	3.0	2.8	2.5	2.3	2.6	2.9	2.8	2.7	2.7	2.4	2.2	1.9	1.8	1.8
2.6	2.7	3.5	4.1	4.2	3.4	3.8	3.8	4.2	3.8	3.9	3.4	3.3	3.2	4.6	5.8	5.4	4.4	4.6	4.7	4.1	4.4	4.7	4.0	4.1	3.4	3.8	3.9	3.8	3.5	3.9	3.8	3.6	3.4	3.2	2.7
5.2	6.8	5.5	5.3	5.6	5.2	5.4	5.7	6.5	6.4	5.7	4.9	4.7	5.2	6.2	6.0	5.2	5.3	4.9	4.0	4.3	4.5	5.0	4.5	4.9	4.9	4.9	5.5	5.1	4.8	5.0	5.1	5.1	5.2	5.4	5.5
6.3	6.2	5.2	4.8	3.6	4.2	5.8	7.1	6.9	5.6	5.8	5.4	6.0	6.7	6.5	5.1	4.1	5.3	5.5	5.7	5.2	3.9	4.0	3.8	3.0	4.3	5.0	5.8	6.1	6.7	6.6	7.1	7.1	6.1	5.6	6.2
7.2	5.5	4.1	4.9	1.7	1.6	3.9	5.6	4.9	9.1	8.1	7.3	6.5	8.1	7.8	4.5	3.6	5.4	5.4	4.0	2.1	1.1	1.7	2.6	2.4	4.9	5.3	7.0	7.5	7.1	8.4	8.6	6.7	4.5	4.8	7.6
6.4	3.6	2.8	3.9	1.9	1.3	7.0	8.5	8.2	10.6	10.6	8.9	9.0	10.4	6.6	4.5	5.2	4.6	2.4	2.1	.8	1.5	1.5	3.1	3.7	6.6	11.2	11.1	7.9	7.3	11.1	8.5	6.4	7.5	9.6	9.0
6.7	6.2	6.8	6.1	8.0	8.7	10.4	12.4	10.9	9.8	11.6	9.9	7.9	10.4	9.0	8.3	9.6	7.1	5.8	7.8	7.7	7.8	4.6	3.2	7.2	10.5	11.6	11.7	11.2	10.4	9.5	9.4	10.9	10.9	9.9	7.2
9.4	8.7	9.0	8.4	6.7	6.8	6.9	6.9	7.7	10.7	11.7	11.0	6.1	6.5	9.5	9.9	9.1	8.1	9.1	11.4	11.4	8.4	3.6	6.0	9.8	10.7	12.1	11.4	10.9	10.6	9.0	11.0	11.8	11.1	10.4	10.6
7.6	6.1	4.1	1.4	1.0	1.9	3.5	1.0	.9	2.1	9.5	10.9	9.9	4.1	1.7	1.6	.9	.9	2.0	8.9	10.7	5.2	2.5	9.5	9.1	11.1	11.8	11.8	8.2	6.0	5.1	8.8	11.2	12.8	12.5	10.6
7.1	6.3	4.2	2.0	1.0	1.1	1.2	.7	.6	.5	4.9	7.2	7.4	3.9	2.4	1.9	1.8	.8	.7	4.0	4.1	2.2	1.5	1.5	1.8	4.4	6.5	5.8	2.9	.8	1.2	2.1	3.3	5.3	6.9	8.6
7.3	8.3	8.4	6.3	6.6	6.4	7.5	5.6	3.2	2.5	1.5	5.3	7.8	6.0	3.4	2.2	2.5	2.0	1.6	2.1	3.0	3.4	3.2	4.4	1.6	2.1	2.3	2.8	3.5	2.8	3.9	3.5	2.8	8.0	3.4	4.6
5.2	6.0	6.5	6.1	6.5	6.1	7.8	8.1	6.8	6.1	4.7	6.4	8.5	8.1	6.9	6.8	6.3	4.3	3.2	2.4	4.1	6.3	5.9	5.9	5.3	3.9	2.7	2.6	2.7	2.6	4.2	5.0	5.6	5.9	5.6	5.6
4.7	5.1	4.7	4.2	4.7	4.4	4.5	5.3	6.5	6.7	6.8	7.6	7.0	6.5	6.5	6.9	6.1	5.5	5.1	5.0	5.0	4.8	4.5	4.5	5.5	5.3	4.7	4.1	4.0	3.7	3.6	3.7	3.9	4.1	5.1	5.8
4.7	4.1	4.5	3.7	3.7	3.7	3.7	3.8	4.0	4.4	5.9	5.5	5.1	4.7	4.8	5.1	4.9	4.7	4.5	4.3	4.2	4.3	4.2	4.1	4.4	4.5	4.1	4.1	3.8	3.8	3.9	4.1	4.1	3.9	4.0	4.6
4.7	4.7	4.8	4.7	4.4	4.1	4.3	3.4	3.9	4.2	4.2	5.6	6.0	5.0	4.3	4.0	3.8	3.7	4.1	3.5	2.9	3.0	3.1	3.4	3.5	3.7	3.1	3.1	3.2	3.3	4.0	4.2	4.2	4.1	4.3	4.4
3.4	3.6	3.9	3.9	4.4	4.7	4.7	4.9	6.0	5.8	6.4	6.9	6.1	5.1	4.5	4.2	4.5	3.1	1.7	1.4	1.5	1.3	1.3	1.0	1.3	1.6	1.1	1.0	1.2	1.7	2.2	1.6	1.9	2.6	3.3	2.9
2.6	3.0	3.6	4.5	4.9	5.0	4.6	4.0	3.3	3.4	4.2	4.6	4.4	4.5	4.7	4.6	4.2	3.6	2.6	2.2	1.9	1.2	1.0	1.1	1.2	1.2	1.4	1.6	1.6	1.6	1.5	1.4	1.7	2.5	3.0	2.8

Figure 45. ATOVS MEAN O-B brightness temperature differences (deg C). SEPTEMBER 2004
Channel: HIRS11 (500 - 700 hPa)
NOAA16, using all observations



-2.6	-2.8	-2.9	-2.9	-2.9	-2.8	-2.9	-3.0	-3.0	-2.8	-2.6	-2.4	-2.0	-1.8	-1.7	-1.9	-2.4	-2.2	-2.2	-2.1	-2.1	-2.2	-2.5	-2.5	-2.7	-2.8	-2.8	-2.9	-2.6	-2.6	-2.6	-2.9	-2.8	-2.6	-2.6	-2.6
-2.0	-2.5	-2.6	-2.6	-2.2	-2.0	-2.9	-2.7	-3.5	-3.5	-3.3	-3.1	-2.6	-2.7	-2.6	-2.6	-2.6	-2.2	-2.1	-2.5	-2.5	-2.7	-2.6	-2.6	-2.2	-1.6	-2.2	-2.7	-2.8	-2.5	-2.4	-2.5	-2.2	-1.7	-1.7	-1.7
-1.7	-1.8	-3.2	-4.2	-4.1	-3.2	-3.4	-3.2	-3.0	-2.6	-2.5	-2.3	-2.1	-2.9	-3.8	-4.2	-3.6	-2.5	-3.0	-3.8	-3.2	-3.2	-3.3	-2.8	-3.4	-2.5	-3.2	-3.9	-3.8	-3.1	-2.9	-3.5	-3.6	-2.9	-2.9	-2.8
-3.1	-4.0	-3.6	-3.4	-3.8	-4.4	-4.2	-3.6	-4.2	-4.2	-3.1	-2.7	-2.6	-3.1	-4.0	-3.6	-2.6	-2.9	-2.2	-2.1	-2.1	-1.8	-1.9	-1.9	-2.6	-2.8	-3.3	-4.4	-3.7	-3.3	-3.2	-3.2	-2.3	-3.1	-3.7	-3.4
-3.2	-2.8	-2.1	-1.8	-.8	-1.3	-2.9	-3.4	-2.7	-2.0	-2.1	-2.8	-2.6	-3.3	-3.0	-1.7	-1.1	-2.1	-2.7	-2.5	-2.2	-.6	-.8	-.4	.4	.1	-.8	-1.9	-2.9	-2.8	-2.7	-3.4	-4.0	-3.0	-2.4	-3.1
-2.7	-1.2	-.5	-.7	.3	.5	-.3	-1.4	-.9	-3.5	-3.5	-3.1	-2.5	-3.7	-3.6	-1.0	-.7	-1.9	-1.4	-.7	.2	.4	.9	-.6	-.4	.2	.5	-2.5	-3.3	-2.1	-4.3	-4.0	-2.1	-1.4	-1.6	-3.9
-1.8	.2	.2	.1	.8	.9	-1.3	-4.7	-3.5	-5.5	-6.4	-4.8	-5.1	-5.5	-2.2	-.8	-1.3	-1.7	-.6	.7	.7	.2	.4	-1.1	-.6	-1.8	-7.4	-9.4	-4.0	-2.2	-6.7	-3.3	-2.2	-2.9	-5.3	-4.4
-2.0	-1.4	-1.7	-1.1	-2.8	-3.2	-5.6	-10.3	-8.3	-6.7	-8.2	-5.9	-2.7	-4.2	-3.7	-3.6	-6.4	-3.4	-2.1	-2.9	-3.2	-2.7	-.3	.5	-2.0	-8.9	-9.2	-11.3	-9.8	-5.8	-5.4	-4.8	-6.9	-6.4	-5.4	-2.7
-4.2	-3.7	-3.8	-3.3	-2.2	-2.2	-2.6	-2.5	-2.7	-7.0	-10.6	-9.9	-1.5	-.3	-3.2	-4.8	-4.5	-3.0	-5.3	-9.2	-8.6	-2.7	1.0	-1.4	-6.3	-9.4	-11.2	-12.7	-9.2	-7.8	-4.3	-7.0	-9.6	-7.2	-6.0	-6.4
-3.7	-2.0	-.7	.6	.5	.0	-.5	.6	.7	.1	-7.0	-9.6	-7.8	-2.8	-.1	.5	.4	.7	.6	-4.1	-7.1	-1.3	.6	-3.9	-4.2	-7.9	-9.7	-10.9	-5.0	-.8	-.2	-5.6	-8.7	-10.0	-10.8	-7.7
-2.3	-1.0	-.3	.7	.9	.7	.5	.7	1.1	1.1	.9	-3.7	-3.9	-2.5	-.6	-.1	-.1	.9	.6	-.4	-1.3	.2	.9	.5	.4	-.7	-2.0	-1.9	-.1	1.2	.6	-.2	-1.5	-2.3	-2.7	-3.7
-3.8	-3.7	-3.8	-2.8	-2.8	-2.9	-3.8	-2.0	.0	.5	.8	-1.0	-2.8	-1.8	.0	.2	.4	.3	.7	1.0	.2	-.1	.4	-.3	.6	.4	.2	.3	.0	.5	-.5	-.2	-.2	-.6	-.4	-1.0
-2.3	-2.8	-3.1	-3.1	-3.2	-3.4	-5.0	-6.6	-4.7	-3.0	-1.5	-3.3	-5.1	-5.0	-3.6	-3.3	-3.4	-1.7	-.8	.1	-.6	-2.0	-1.9	-2.1	-1.8	-.7	-.4	-.2	-.5	-.6	-1.6	-1.6	-2.5	-2.8	-2.3	-2.3
-2.9	-3.3	-2.8	-2.4	-3.0	-2.8	-2.9	-2.9	-4.3	-4.9	-5.2	-6.1	-5.2	-4.8	-5.0	-4.7	-4.5	-4.4	-3.8	-3.7	-3.6	-3.3	-3.0	-3.2	-4.2	-3.9	-3.7	-3.0	-2.7	-2.5	-2.2	-2.0	-1.8	-2.2	-2.8	-4.0
-4.3	-3.6	-4.5	-2.8	-3.2	-2.9	-3.1	-3.2	-2.9	-3.6	-5.4	-4.6	-4.6	-4.2	-4.5	-5.0	-4.9	-4.5	-4.4	-4.2	-4.6	-4.9	-5.2	-5.2	-5.0	-5.0	-4.7	-4.7	-4.7	-4.7	-4.8	-4.5	-4.1	-3.8	-4.0	-4.1
-6.6	-6.8	-6.1	-6.1	-5.4	-5.3	-5.5	-4.4	-5.0	-5.4	-5.9	-7.9	-8.5	-7.2	-6.7	-6.1	-6.0	-5.2	-5.2	-4.6	-4.2	-4.7	-4.9	-4.6	-4.3	-4.6	-4.4	-4.4	-4.7	-4.9	-5.9	-6.0	-6.3	-6.4	-6.0	-5.8
-5.2	-6.3	-6.8	-6.9	-7.2	-7.4	-7.6	-7.6	-8.2	-7.2	-8.3	-9.9	-10.6	-9.3	-9.3	-8.2	-6.7	-3.8	-2.1	-1.7	-1.1	-.9	-1.5	-.9	-.6	-.8	-1.3	-1.6	-3.5	-3.9	-3.5	-2.5	-3.4	-3.6	-4.8	-4.9
-5.1	-6.1	-6.8	-7.5	-7.3	-7.2	-6.3	-6.7	-4.7	-4.7	-6.6	-9.0	-8.7	-8.1	-8.2	-6.9	-5.9	-5.8	-4.8	-4.0	-2.7	-2.3	-2.9	-3.1	-3.1	-2.6	-4.9	-5.1	-4.6	-4.5	-3.9	-3.0	-3.3	-2.9	-5.0	-5.4

Figure 46. ATOVS SD O-B brightness temperature differences (deg C). SEPTEMBER 2004
Channel: HIRS11 (500 - 700 hPa)
NOAA16, using all observations



2.4	2.4	2.5	2.4	2.6	2.6	2.5	2.6	2.6	2.9	3.4	3.1	2.8	2.7	3.0	3.2	3.2	2.9	3.2	3.2	2.8	2.9	3.3	3.3	3.4	3.3	3.1	3.2	2.9	2.7	2.7	2.8	2.8	2.9	2.7	2.5
2.5	2.7	2.9	2.9	2.7	2.8	2.9	3.0	4.1	4.5	4.2	4.0	3.7	3.3	3.3	4.2	3.9	3.4	3.3	3.6	3.7	3.8	3.8	3.6	3.0	2.9	3.2	3.9	3.8	3.6	3.4	3.2	3.0	2.6	2.7	2.6
2.9	3.2	4.2	5.2	5.5	4.4	5.0	4.9	5.1	4.6	4.6	3.9	3.9	4.1	5.6	6.2	6.2	4.9	5.1	5.7	5.0	5.3	5.5	4.8	5.2	4.2	4.6	5.1	4.9	4.5	5.0	4.7	4.5	4.1	3.8	3.1
5.8	6.2	6.0	5.7	6.1	6.1	6.4	6.5	7.4	7.1	6.4	5.5	5.2	5.8	6.8	6.4	5.7	5.8	5.4	4.5	4.8	5.0	5.4	5.1	5.5	5.7	5.6	6.6	6.1	5.9	6.1	5.9	5.5	5.9	6.3	6.4
6.5	6.6	5.4	5.1	3.9	4.5	6.1	7.0	6.8	5.9	6.0	5.7	6.2	7.3	6.8	5.3	4.3	5.8	6.0	6.0	5.4	4.3	4.1	3.4	3.1	4.1	5.1	6.2	6.3	7.0	7.2	7.3	7.0	6.4	6.2	6.4
7.2	5.7	4.5	5.3	2.2	2.3	4.4	5.4	5.0	8.6	7.9	7.7	7.2	8.5	7.8	4.8	3.9	5.3	5.3	4.7	2.5	2.1	2.6	3.3	3.0	4.8	5.3	7.2	7.4	6.6	8.2	8.2	6.5	4.7	5.1	7.6
7.4	4.5	3.8	4.7	2.4	2.0	7.1	8.9	8.5	11.2	11.1	9.5	9.8	10.8	7.2	4.2	4.6	4.3	2.8	2.5	2.3	2.3	2.6	3.1	3.6	7.2	12.2	11.9	8.3	7.7	11.3	8.8	6.8	8.1	10.3	10.2
7.8	7.3	7.7	6.7	9.0	9.7	11.3	13.1	11.8	11.3	12.8	11.1	8.8	11.5	10.1	9.2	10.6	7.9	6.4	8.7	8.2	8.3	5.1	3.7	7.8	11.6	12.5	12.3	12.4	11.1	10.4	10.0	11.9	11.9	10.7	8.3
10.4	9.8	9.8	9.1	7.4	7.6	7.1	7.3	8.2	11.5	12.9	13.0	7.4	6.9	10.2	10.5	9.7	9.1	10.3	13.2	13.5	9.5	3.5	6.5	10.0	11.3	12.7	12.2	12.1	11.9	9.5	11.6	12.9	12.4	11.4	11.8
9.3	7.5	5.5	2.2	1.8	2.9	4.9	1.7	1.5	2.6	11.3	13.3	12.2	5.7	2.5	1.8	1.2	1.4	2.8	10.2	12.9	5.5	2.9	10.1	9.4	11.4	12.9	12.9	9.4	6.8	6.1	10.6	12.4	14.4	13.9	12.1
7.7	6.8	5.3	2.9	1.3	1.4	2.0	1.1	1.4	1.5	5.3	8.5	8.0	5.1	3.7	3.0	2.9	1.8	1.7	3.9	4.2	2.7	1.7	2.0	2.2	5.0	7.1	6.8	3.6	1.6	1.6	2.8	4.9	6.5	7.7	9.2
6.9	8.1	8.3	6.9	7.1	7.0	8.4	6.5	3.9	3.1	2.2	6.4	8.2	6.2	3.9	2.8	3.1	3.1	2.8	2.7	3.2	4.1	3.7	4.4	1.9	2.3	2.6	2.9	3.5	2.8	3.8	3.2	2.3	3.4	3.8	4.4
6.4	6.6	7.4	7.1	7.6	7.2	8.6	9.1	8.0	7.0	5.9	8.1	10.6	9.6	7.9	7.7	7.2	5.1	4.2	3.4	4.8	6.9	6.5	6.6	5.8	4.3	3.4	3.5	3.6	3.9	4.6	5.5	5.7	6.7	6.0	6.3
6.2	6.1	5.9	5.3	6.2	5.5	5.5	6.4	7.8	8.1	8.9	9.9	8.9	7.8	8.0	8.5	7.8	7.1	6.5	6.4	6.5	5.9	5.8	5.8	6.9	6.6	5.9	5.2	5.1	4.7	4.5	4.6	4.8	5.2	6.2	7.2
6.1	5.6	6.1	4.9	5.0	4.8	5.0	5.2	5.2	6.2	7.8	7.7	7.0	6.5	6.7	7.3	7.1	6.9	6.5	6.2	5.9	6.2	6.1	5.9	6.4	6.3	5.8	5.9	5.5	5.6	5.7	5.9	5.8	5.6	5.6	6.1
7.0	7.0	6.7	6.7	6.2	5.9	6.1	5.0	5.7	6.1	6.3	8.6	9.3	7.7	6.9	6.3	6.1	5.7	6.1	5.2	4.2	4.6	4.9	5.1	5.5	5.5	4.9	5.0	5.2	5.4	6.3	6.4	6.5	6.5	6.8	6.9
5.2	5.2	5.5	6.1	7.0	7.4	7.4	7.4	8.8	8.5	9.6	10.8	9.6	8.3	7.5	7.2	7.5	5.8	4.0	3.7	3.3	2.9	3.0	2.6	3.0	3.3	2.7	2.4	2.6	3.5	4.1	3.0	3.5	5.0	6.2	5.1
5.2	5.6	6.6	7.8	8.5	8.6	8.0	6.9	5.8	6.0	7.1	7.8	7.7	8.0	8.3	8.2	7.6	6.1	4.6	4.1	3.8	2.6	2.4	2.6	2.8	3.2	3.6	3.4	3.4	3.2	3.1	3.1	3.3	5.4	6.3	5.5

Figure 47. ATOVS MEAN O-B brightness temperature differences (deg C). SEPTEMBER 2004
Channel: HIRS4 (400 hPa)
NOAA16, using all observations

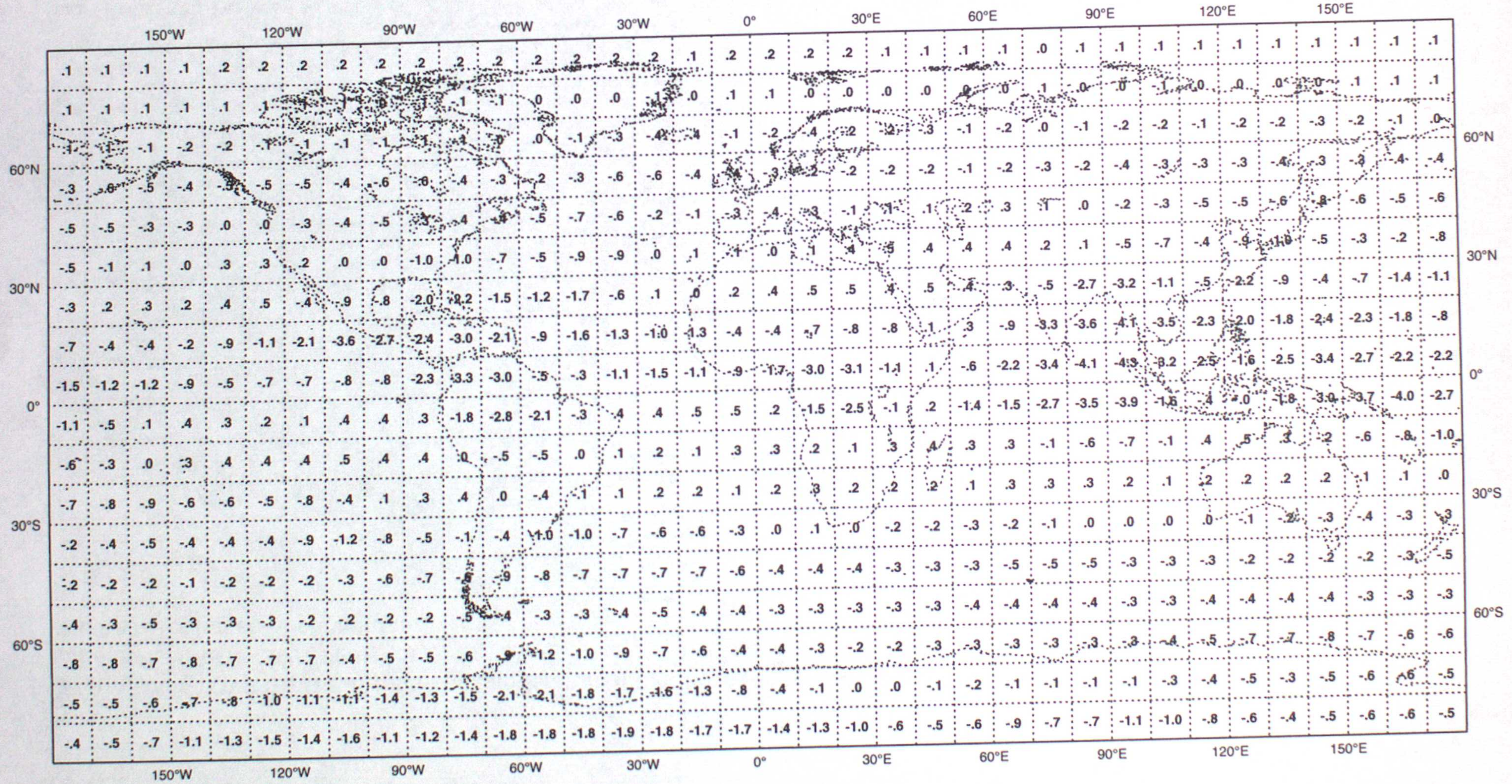
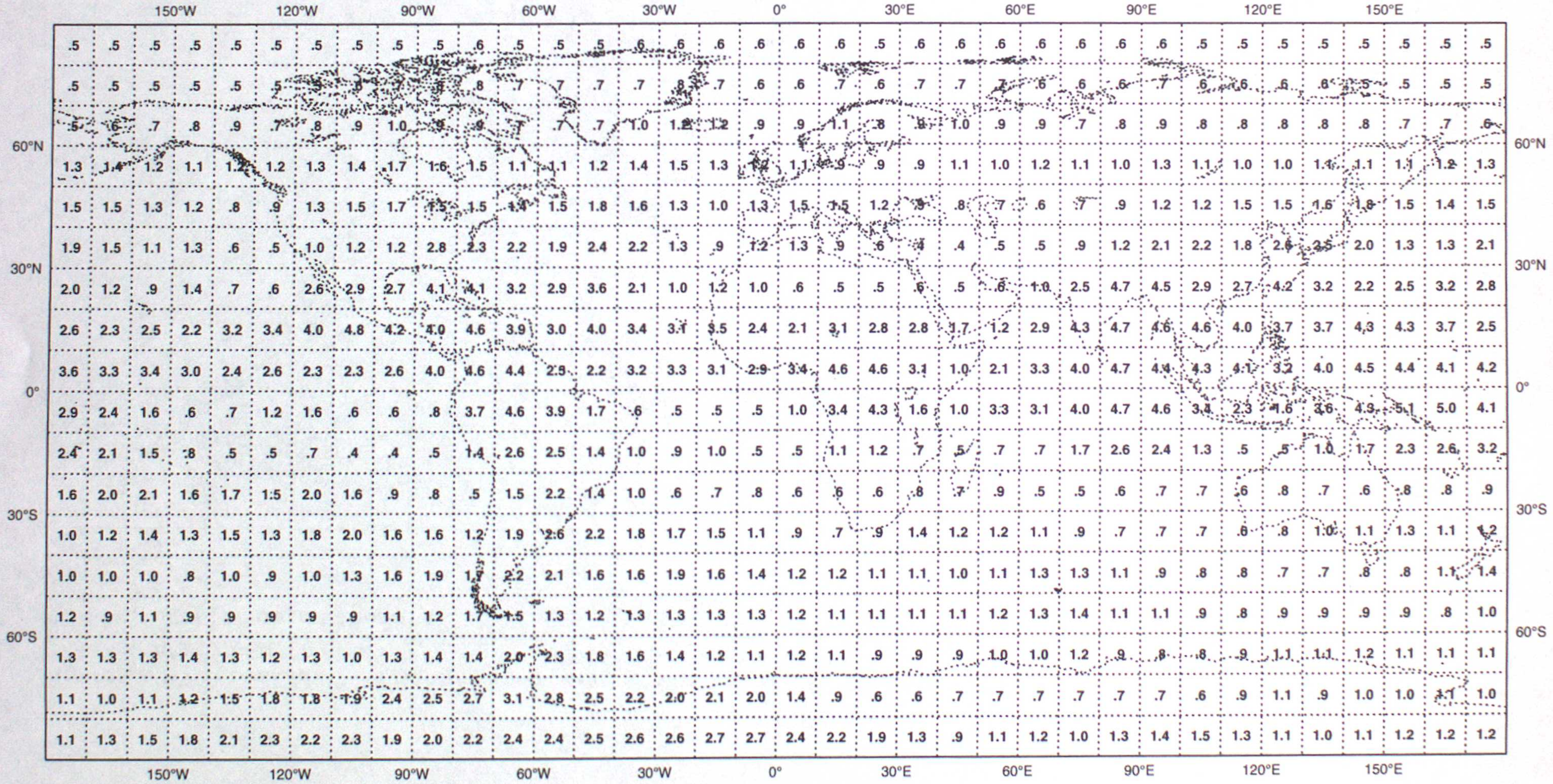

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
.1 .1 .1 .1 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .1 .2 .2 .2 .2 .1 .1 .1 .1 .0 .1 .1 .1 .1 .1 .1 .1 .1 .1 .1
.1 .1 .1 .1 .1 .1 -.1 -.1 .0 -.1 -.1 -.1 .0 .0 .0 -.1 .0 .1 .1 .0 .0 .0 .0 .0 .0 .1 .0 .0 -.1 .0 .0 .0 .0 .1 .1 .1
-.1 -.1 -.1 -.2 -.2 -.1 -.1 -.1 -.1 -.1 -.1 .0 .0 -.1 -.3 -.4 -.4 -.1 -.2 -.4 -.2 -.2 -.3 -.1 -.2 .0 -.1 -.2 -.2 -.1 -.2 -.2 -.3 -.2 -.1 .0
-.3 -.6 -.5 -.4 -.5 -.5 -.5 -.4 -.6 -.6 -.4 -.3 .2 -.3 -.6 -.6 -.4 -.4 -.3 -.2 -.2 -.2 -.2 -.1 -.2 -.3 -.2 -.4 -.3 -.3 -.3 -.4 -.3 -.3 -.4 -.4
-.5 -.5 -.3 -.3 .0 .0 -.3 -.4 -.5 -.3 -.4 -.4 -.5 -.7 -.6 -.2 -.1 -.3 -.4 -.3 -.1 .1 .1 .2 .3 .1 .0 -.2 -.3 -.5 -.5 -.6 -.8 -.6 -.5 -.6
-.5 -.1 .1 .0 .3 .3 .2 .0 .0 -1.0 -1.0 -.7 -.5 -.9 -.9 .0 .1 -.1 .0 .1 .4 .5 .4 .4 .4 .2 .1 -.5 -.7 -.4 -.9 -1.0 -.5 -.3 -.2 -.8
-.3 .2 .3 .2 .4 .5 -.4 -.9 -.8 -2.0 -2.2 -1.5 -1.2 -1.7 -.6 .1 .0 .2 .4 .5 .5 .4 .5 .4 .3 -.5 -2.7 -3.2 -1.1 -.5 -2.2 -.9 -.4 -.7 -1.4 -1.1
-.7 -.4 -.4 -.2 -.9 -1.1 -2.1 -3.6 -2.7 -2.4 -3.0 -2.1 -.9 -1.6 -1.3 -1.0 -1.3 -.4 -.4 -.7 -.8 -.8 .1 .3 -.9 -3.3 -3.6 -4.1 -3.5 -2.3 -2.0 -1.8 -2.4 -2.3 -1.8 -.8
-1.5 -1.2 -1.2 -.9 -.5 -.7 -.7 -.8 -.8 -2.3 -3.3 -3.0 -.5 -.3 -1.1 -1.5 -1.1 -.9 -1.7 -3.0 -3.1 -1.1 .1 -.6 -2.2 -3.4 -4.1 -4.3 -3.2 -2.5 -1.6 -2.5 -3.4 -2.7 -2.2 -2.2
-1.1 -.5 .1 .4 .3 .2 .1 .4 .4 .3 -1.8 -2.8 -2.1 -.3 .4 .4 .5 .5 .2 -1.5 -2.5 -.1 .2 -1.4 -1.5 -2.7 -3.5 -3.9 -1.6 -.4 .0 -1.8 -3.0 -3.7 -4.0 -2.7
-.6 -.3 .0 .3 .4 .4 .4 .5 .4 .4 .0 -.5 -.5 .0 .1 .2 .1 .3 .3 .2 .1 .3 .4 .3 .3 -.1 -.6 -.7 -.1 .4 .5 .3 .2 -.6 -.8 -1.0
-.7 -.8 -.9 -.6 -.6 -.5 -.8 -.4 .1 .3 .4 .0 -.4 -.1 .1 .2 .2 .1 .2 .3 .2 .2 .2 .1 .3 .3 .3 .2 .1 .2 .2 .2 .2 -.1 .1 .0
-.2 -.4 -.5 -.4 -.4 -.4 -.9 -1.2 -.8 -.5 -.1 -.4 -1.0 -1.0 -.7 -.6 -.6 -.3 .0 .1 .0 -.2 -.2 -.3 -.2 -.1 .0 .0 .0 .0 -.1 -.2 -.3 -.4 -.3 -.3
-.2 -.2 -.2 -.1 -.2 -.2 -.2 -.3 -.6 -.7 -.6 -.9 -.8 -.7 -.7 -.7 -.7 -.6 -.4 -.4 -.4 -.3 -.3 -.3 -.5 -.5 -.5 -.3 -.3 -.3 -.2 -.2 -.2 -.2 -.3 -.5
-.4 -.3 -.5 -.3 -.3 -.3 -.2 -.2 -.2 -.2 -.5 -.4 -.3 -.3 -.4 -.5 -.4 -.4 -.3 -.3 -.3 -.3 -.3 -.4 -.4 -.4 -.4 -.3 -.3 -.4 -.4 -.4 -.4 -.3 -.3 -.3
-.8 -.8 -.7 -.8 -.7 -.7 -.7 -.4 -.5 -.5 -.6 -.9 -1.2 -1.0 -.9 -.7 -.6 -.4 -.4 -.3 -.2 -.2 -.3 -.3 -.3 -.3 -.3 -.3 -.4 -.5 -.7 -.7 -.8 -.7 -.6 -.6
-.5 -.5 -.6 -.7 -.8 -1.0 -1.1 -1.1 -1.4 -1.3 -1.5 -2.1 -2.1 -1.8 -1.7 -1.6 -1.3 -.8 -.4 -.1 .0 .0 -.1 -.2 -.1 -.1 -.1 -.1 -.3 -.4 -.5 -.3 -.5 -.6 -.6 -.5
-.4 -.5 -.7 -1.1 -1.3 -1.5 -1.4 -1.6 -1.1 -1.2 -1.4 -1.8 -1.8 -1.8 -1.9 -1.8 -1.7 -1.7 -1.4 -1.3 -1.0 -.6 -.5 -.6 -.9 -.7 -.7 -1.1 -1.0 -.8 -.6 -.4 -.5 -.6 -.6 -.5

Figure 48. ATOVS SD O-B brightness temperature differences (deg C). SEPTEMBER 2004
Channel: HIRS4 (400 hPa)
NOAA16, using all observations



.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.6	.5	.5	.5	.6	.6	.6	.6	.6	.6	.5	.6	.6	.6	.6	.6	.6	.6	.5	.5	.5	.5	.5	.5	.5	.5
.5	.5	.5	.5	.5	.5	.5	.6	.7	.8	.8	.7	.7	.7	.7	.8	.7	.6	.6	.7	.6	.7	.7	.7	.6	.6	.6	.7	.6	.6	.6	.6	.5	.5	.5	.5
.5	.6	.7	.8	.9	.7	.8	.9	1.0	.9	.9	.7	.7	.7	1.0	1.2	1.2	.9	.9	1.1	.8	.8	1.0	.9	.9	.7	.8	.9	.8	.8	.8	.8	.8	.7	.7	.6
1.3	1.4	1.2	1.1	1.2	1.2	1.3	1.4	1.7	1.6	1.5	1.1	1.1	1.2	1.4	1.5	1.3	1.2	1.1	.9	.9	.9	1.1	1.0	1.2	1.1	1.0	1.3	1.1	1.0	1.0	1.4	1.1	1.1	1.2	1.3
1.5	1.5	1.3	1.2	.8	.9	1.3	1.5	1.7	1.5	1.5	1.4	1.5	1.8	1.6	1.3	1.0	1.3	1.5	1.5	1.2	.9	.8	.7	.6	.7	.9	1.2	1.2	1.5	1.5	1.6	1.8	1.5	1.4	1.5
1.9	1.5	1.1	1.3	.6	.5	1.0	1.2	1.2	2.8	2.3	2.2	1.9	2.4	2.2	1.3	.9	1.2	1.3	.9	.6	.4	.4	.5	.5	.9	1.2	2.1	2.2	1.8	2.6	2.5	2.0	1.3	1.3	2.1
2.0	1.2	.9	1.4	.7	.6	2.6	2.9	2.7	4.1	4.1	3.2	2.9	3.6	2.1	1.0	1.2	1.0	.6	.5	.5	.6	.5	.6	1.0	2.5	4.7	4.5	2.9	2.7	4.2	3.2	2.2	2.5	3.2	2.8
2.6	2.3	2.5	2.2	3.2	3.4	4.0	4.8	4.2	4.0	4.6	3.9	3.0	4.0	3.4	3.1	3.5	2.4	2.1	3.1	2.8	2.8	1.7	1.2	2.9	4.3	4.7	4.6	4.6	4.0	3.7	3.7	4.3	4.3	3.7	2.5
3.6	3.3	3.4	3.0	2.4	2.6	2.3	2.3	2.6	4.0	4.6	4.4	2.5	2.2	3.2	3.3	3.1	2.9	3.4	4.6	4.6	3.1	1.0	2.1	3.3	4.0	4.7	4.4	4.3	4.1	3.2	4.0	4.5	4.4	4.1	4.2
2.9	2.4	1.6	.6	.7	1.2	1.6	.6	.6	.8	3.7	4.6	3.9	1.7	.6	.5	.5	.5	1.0	3.4	4.3	1.6	1.0	3.3	3.1	4.0	4.7	4.6	3.4	2.3	1.6	3.6	4.3	5.1	5.0	4.1
2.4	2.1	1.5	.8	.5	.5	.7	.4	.4	.5	1.4	2.6	2.5	1.4	1.0	.9	1.0	.5	.5	1.1	1.2	.7	.5	.7	.7	1.7	2.6	2.4	1.3	.5	.5	1.0	1.7	2.3	2.6	3.2
1.6	2.0	2.1	1.6	1.7	1.5	2.0	1.6	.9	.8	.5	1.5	2.2	1.4	1.0	.6	.7	.8	.6	.6	.6	.8	.7	.9	.5	.5	.6	.7	.7	.6	.8	.7	.6	.8	.8	.9
1.0	1.2	1.4	1.3	1.5	1.3	1.8	2.0	1.6	1.6	1.2	1.9	2.6	2.2	1.8	1.7	1.5	1.1	.9	.7	.9	1.4	1.2	1.2	1.1	.9	.7	.7	.7	.6	.8	1.0	1.1	1.3	1.1	1.2
1.0	1.0	1.0	.8	1.0	.9	1.0	1.3	1.6	1.9	1.7	2.2	2.1	1.6	1.6	1.9	1.6	1.4	1.2	1.2	1.1	1.1	1.0	1.1	1.3	1.3	1.1	.9	.8	.8	.7	.7	.8	.8	1.1	1.4
1.2	.9	1.1	.9	.9	.9	.9	.9	1.1	1.2	1.7	1.5	1.3	1.2	1.3	1.3	1.3	1.3	1.2	1.1	1.1	1.1	1.1	1.2	1.3	1.4	1.1	1.1	.9	.8	.9	.9	.9	.9	.8	1.0
1.3	1.3	1.3	1.4	1.3	1.2	1.3	1.0	1.3	1.4	1.4	2.0	2.3	1.8	1.6	1.4	1.2	1.1	1.2	1.1	.9	.9	.9	1.0	1.0	1.2	.9	.8	.8	.9	1.1	1.1	1.2	1.1	1.1	1.1
1.1	1.0	1.1	1.2	1.5	1.8	1.8	1.9	2.4	2.5	2.7	3.1	2.8	2.5	2.2	2.0	2.1	2.0	1.4	.9	.6	.6	.7	.7	.7	.7	.7	.7	.6	.9	1.1	.9	1.0	1.0	1.1	1.0
1.1	1.3	1.5	1.8	2.1	2.3	2.2	2.3	1.9	2.0	2.2	2.4	2.4	2.5	2.6	2.6	2.7	2.7	2.4	2.2	1.9	1.3	.9	1.1	1.2	1.0	1.3	1.4	1.5	1.3	1.1	1.0	1.1	1.2	1.2	1.2

Figure 49. ATOVS MEAN O-B brightness temperature differences (deg C). SEPTEMBER 2004
Channel: AMSUA-5 (700 hPa)
NOAA16, using all observations

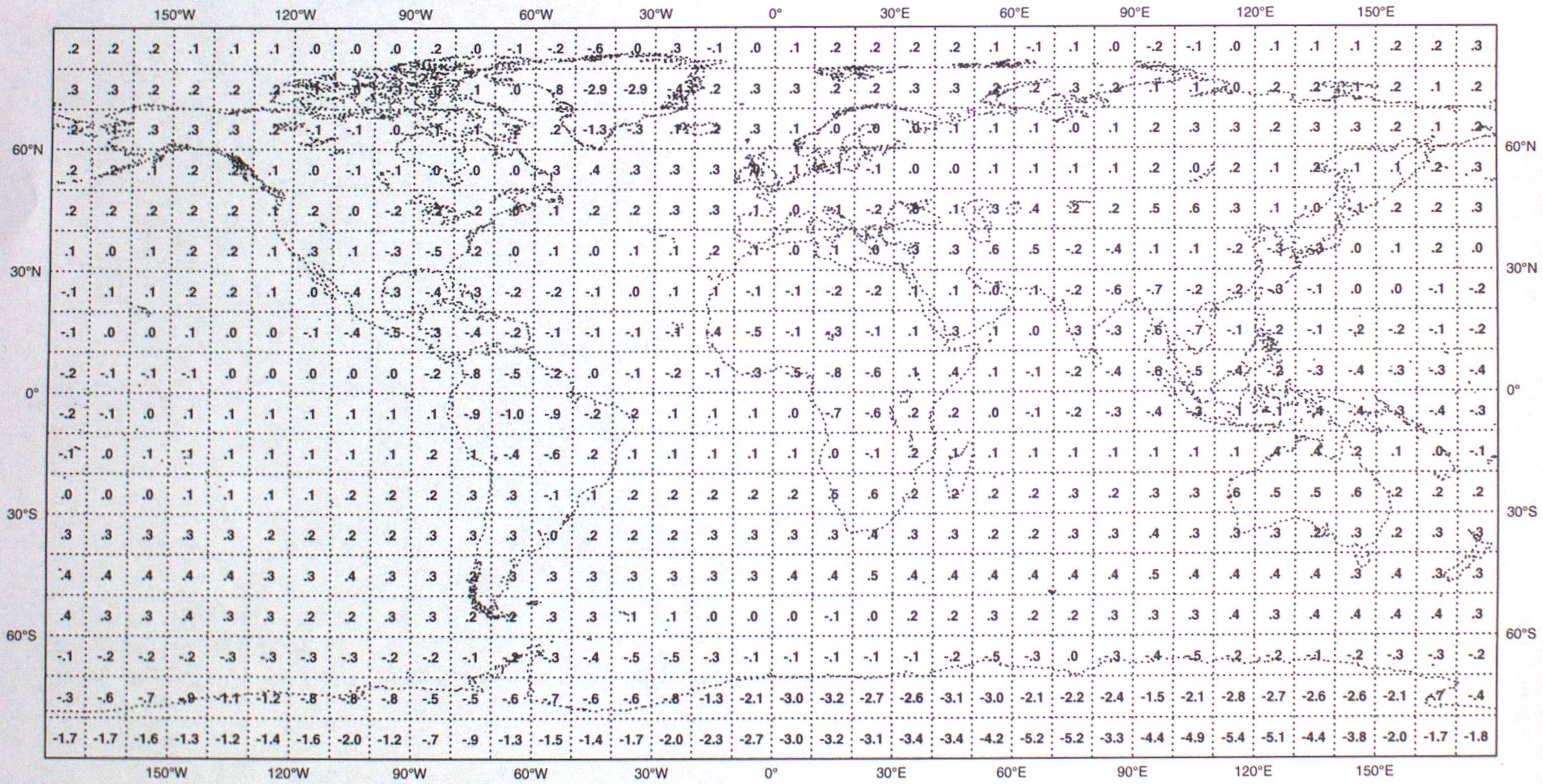

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
.2 .2 .2 .1 .1 .1 .0 .0 .0 .2 .0 -.1 -.2 -.6 .0 .3 -.1 .0 .1 .2 .2 .2 .2 .1 -.1 .1 .0 -.2 -.1 .0 .1 .1 .1 .2 .2 .3
.3 .3 .2 .2 .2 .2 .1 .0 .1 .0 .1 .0 .8 -2.9 -2.9 -.4 .2 .3 .3 .2 .2 .3 .3 .2 .2 .3 .2 .1 .1 .0 .2 .2 .1 .2 .1 .2
.2 .1 .3 .3 .3 .2 -.1 -.1 .0 .1 .1 .2 .2 -1.3 -.3 .1 .2 .3 .1 .0 .0 .0 .1 .1 .1 .0 .1 .2 .3 .3 .2 .3 .3 .2 .1 .2
.2 .2 .1 .2 .2 .1 .0 -.1 -.1 .0 .0 .0 .3 .4 .3 .3 .3 .0 .1 .1 -.1 .0 .0 .1 .1 .1 .1 .2 .0 .2 .1 .2 .1 .1 .2 .3
.2 .2 .2 .2 .2 .1 .2 .0 -.2 .2 -.2 .0 .1 .2 .2 .3 .3 .1 .0 -.1 -.2 .0 .1 .3 .4 .2 .2 .5 .6 .3 .1 .0 .1 .2 .2 .3
.1 .0 .1 .2 .2 .1 .3 .1 -.3 -.5 .2 .0 .1 .0 .1 .1 .2 .1 .0 .1 .0 .3 .3 .6 .5 -.2 -.4 .1 .1 -.2 -.3 -.3 .0 .1 .2 .0
-.1 .1 .1 .2 .2 .1 .0 -.4 -.3 -.4 -.3 -.2 -.2 -.1 .0 .1 .1 -.1 -.1 -.2 -.2 .1 .1 .0 -.1 -.2 -.6 -.7 -.2 -.2 -.3 -.1 .0 .0 -.1 -.2
-.1 .0 .0 .1 .0 .0 -.1 -.4 -.5 -.3 -.4 -.2 -.1 -.1 -.1 -.1 .4 -.5 -.1 -.3 -.1 .1 .3 .1 .0 -.3 -.3 -.6 -.7 -.1 -.2 -.1 -.2 -.2 -.1 -.2
-.2 -.1 -.1 -.1 .0 .0 .0 .0 .0 -.2 -.8 -.5 -.2 .0 -.1 -.2 -.1 -.3 -.5 -.8 -.6 .1 .4 .1 -.1 -.2 -.4 -.6 -.5 -.4 -.3 -.3 -.4 -.3 -.3 -.4
-.2 -.1 .0 .1 .1 .1 .1 .1 .1 .1 -.9 -1.0 -.9 -.2 .2 .1 .1 .1 .0 -.7 -.6 .2 .2 .0 -.1 -.2 -.3 -.4 -.3 -.1 -.1 -.4 -.4 -.3 -.4 -.3
-.1 .0 .1 .1 .1 .1 .1 .1 .1 .2 .1 -.4 -.6 .2 .1 .1 .1 .1 .1 .0 -.1 .2 .1 .1 .1 .1 .1 .1 .1 .1 .4 .4 .2 .1 .0 -.1
.0 .0 .0 .1 .1 .1 .1 .2 .2 .2 .3 .3 -.1 .1 .2 .2 .2 .2 .5 .6 .2 .2 .2 .2 .2 .3 .2 .3 .3 .6 .5 .5 .6 .2 .2 .2
.3 .3 .3 .3 .3 .2 .2 .2 .2 .3 .3 .3 .0 .2 .2 .2 .3 .3 .3 .3 .4 .3 .3 .2 .2 .3 .3 .4 .3 .3 .3 .2 .3 .2 .3 .3
.4 .4 .4 .4 .4 .3 .3 .4 .3 .3 .2 .3 .3 .3 .3 .3 .3 .3 .4 .4 .5 .4 .4 .4 .4 .4 .4 .5 .4 .4 .4 .4 .3 .4 .3 .3
.4 .3 .3 .4 .3 .3 .2 .2 .3 .3 .2 .2 .3 .3 .1 .1 .0 .0 .0 -.1 .0 .2 .2 .3 .2 .2 .3 .3 .3 .4 .3 .4 .4 .4 .4 .3
-.1 -.2 -.2 -.2 -.3 -.3 -.3 -.3 -.2 -.2 -.1 -.2 -.3 -.4 -.5 -.5 -.3 -.1 -.1 -.1 -.1 -.1 -.2 -.5 -.3 .0 -.3 -.4 -.5 -.2 -.2 -.1 -.2 -.3 -.3 -.2
-.3 -.6 -.7 -.9 -1.1 -1.2 -.8 -.8 -.8 -.5 -.5 -.6 -.7 -.6 -.6 -.8 -1.3 -2.1 -3.0 -3.2 -2.7 -2.6 -3.1 -3.0 -2.1 -2.2 -2.4 -1.5 -2.1 -2.8 -2.7 -2.6 -2.6 -2.1 -.7 -.4
-1.7 -1.7 -1.6 -1.3 -1.2 -1.4 -1.6 -2.0 -1.2 -.7 -.9 -1.3 -1.5 -1.4 -1.7 -2.0 -2.3 -2.7 -3.0 -3.2 -3.1 -3.4 -3.4 -4.2 -5.2 -5.2 -3.3 -4.4 -4.9 -5.4 -5.1 -4.4 -3.8 -2.0 -1.7 -1.8

Figure 50. ATOVS SD O-B brightness temperature differences (deg C). SEPTEMBER 2004
Channel: AMSUA-5 (700 hPa)
NOAA16, using all observations

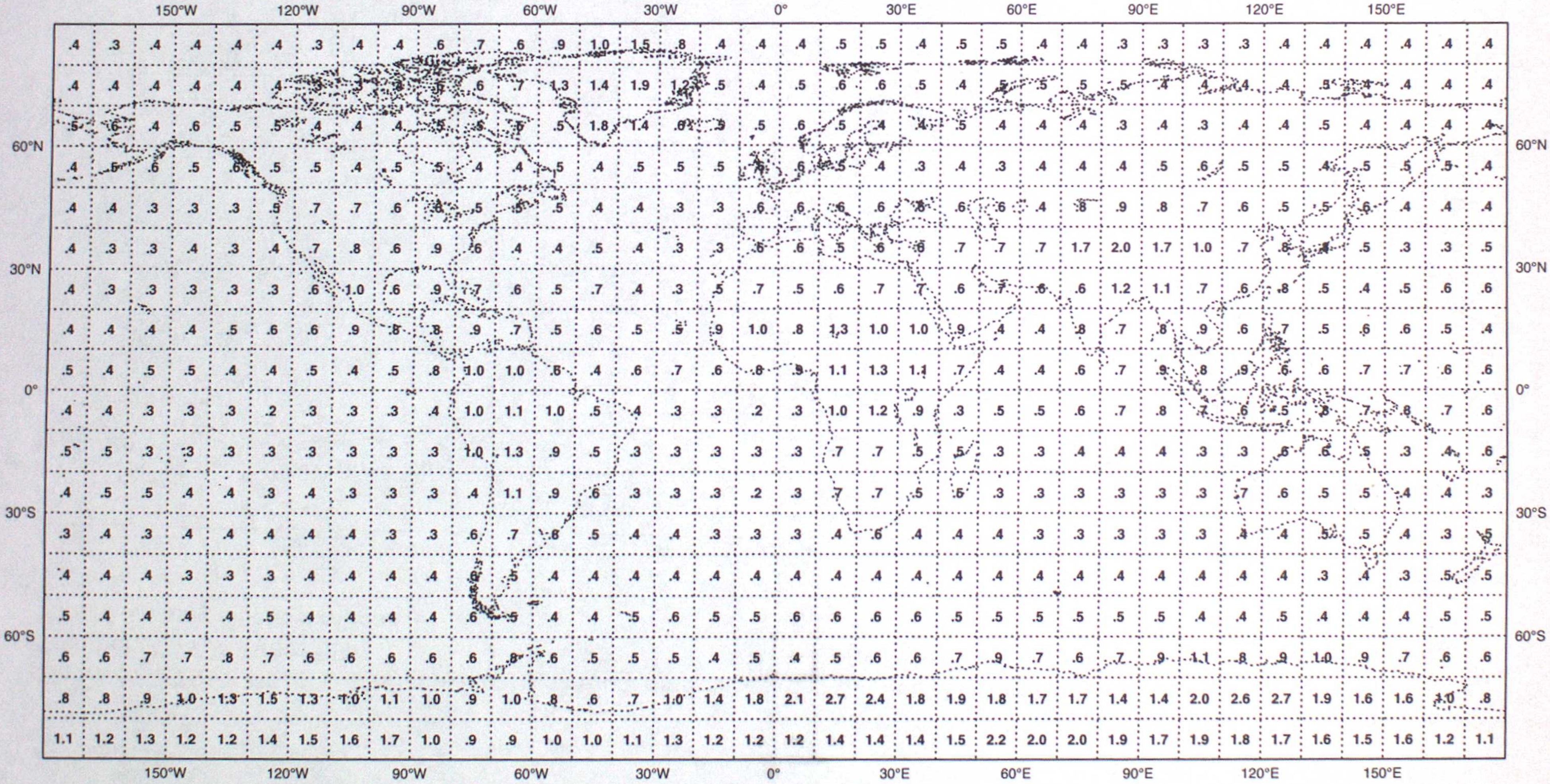
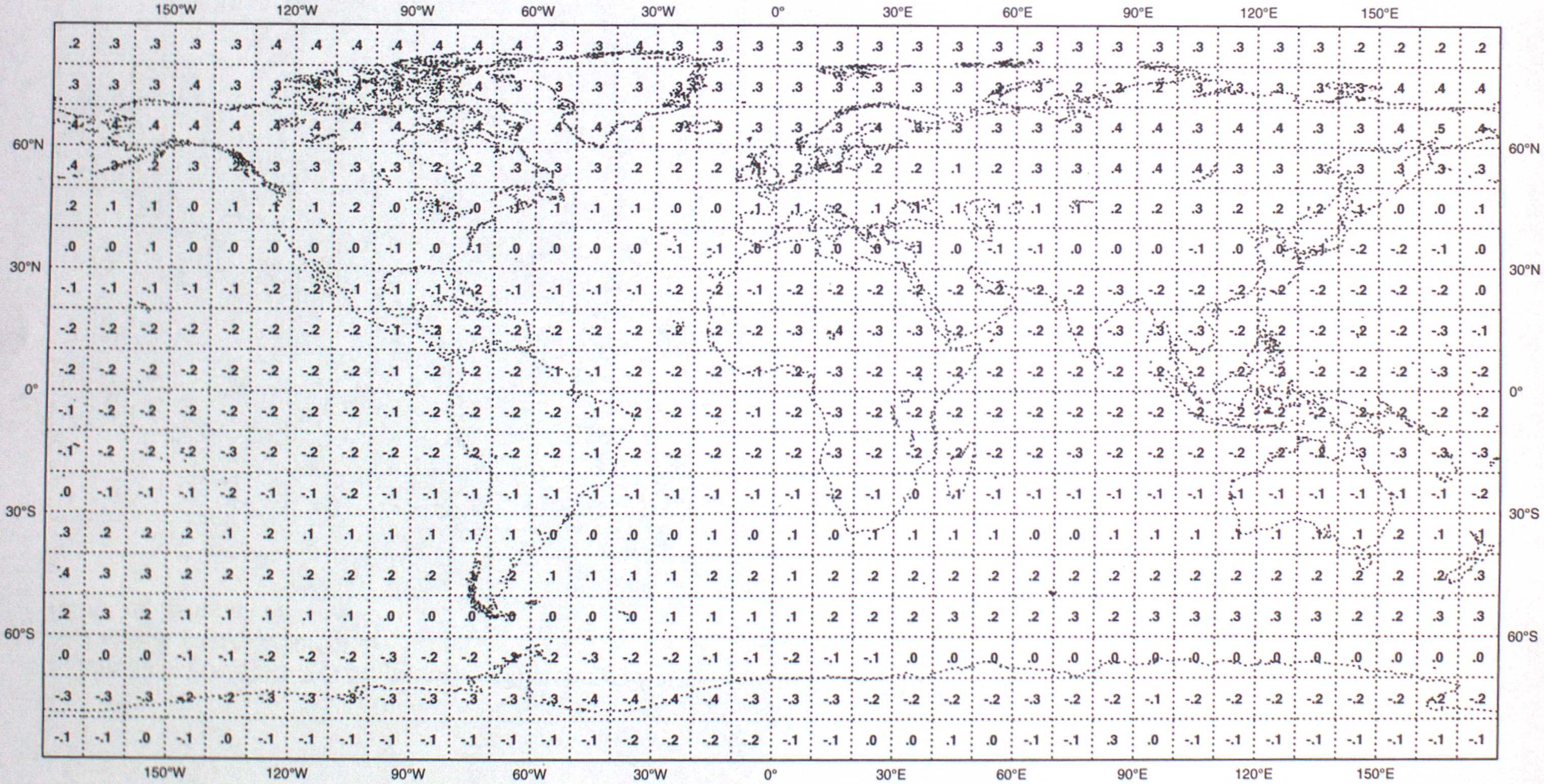

150°W 120°W 90°W 60°W 30°W 0° 30°E 60°E 90°E 120°E 150°E
60°N
30°N
0°
30°S
60°S
.4 .3 .4 .4 .4 .4 .3 .4 .4 .6 .7 .6 .9 1.0 1.5 .8 .4 .4 .4 .5 .5 .4 .5 .5 .4 .4 .3 .3 .3 .3 .4 .4 .4 .4 .4 .4
.4 .4 .4 .4 .4 .4 .3 .3 .8 .5 .6 .7 1.3 1.4 1.9 1.2 .5 .4 .5 .6 .6 .5 .4 .5 .5 .5 .5 .4 .4 .4 .4 .5 .4 .4 .4 .4
.5 .6 .4 .6 .5 .5 .4 .4 .4 .5 .5 .5 .5 1.8 1.4 .6 .5 .5 .6 .5 .4 .4 .5 .4 .4 .4 .3 .4 .3 .4 .4 .5 .4 .4 .4 .4
.4 .5 .6 .5 .6 .5 .5 .4 .5 .5 .4 .4 .5 .4 .5 .5 .5 .7 .6 .5 .4 .3 .4 .3 .4 .4 .4 .5 .6 .5 .5 .4 .5 .5 .5 .4
.4 .4 .3 .3 .3 .5 .7 .7 .6 .8 .5 .5 .5 .4 .4 .3 .3 .6 .6 .6 .6 .8 .6 .6 .4 .8 .9 .8 .7 .6 .5 .5 .6 .4 .4 .4
.4 .3 .3 .4 .3 .4 .7 .8 .6 .9 .6 .4 .4 .5 .4 .3 .3 .6 .6 .5 .6 .6 .7 .7 .7 1.7 2.0 1.7 1.0 .7 .8 .4 .5 .3 .3 .5
.4 .3 .3 .3 .3 .3 .6 1.0 .6 .9 .7 .6 .5 .7 .4 .3 .5 .7 .5 .6 .7 .7 .6 .7 .6 .6 1.2 1.1 .7 .6 .8 .5 .4 .5 .6 .6
.4 .4 .4 .4 .5 .6 .6 .9 .8 .8 .9 .7 .5 .6 .5 .5 .9 1.0 .8 1.3 1.0 1.0 .9 .4 .4 .8 .7 .8 .9 .6 .7 .5 .6 .6 .5 .4
.5 .4 .5 .5 .4 .4 .5 .4 .5 .8 1.0 1.0 .6 .4 .6 .7 .6 .8 .9 1.1 1.3 1.1 .7 .4 .4 .6 .7 .9 .8 .9 .6 .6 .7 .7 .6 .6
.4 .4 .3 .3 .3 .2 .3 .3 .3 .4 1.0 1.1 1.0 .5 .4 .3 .3 .2 .3 1.0 1.2 .9 .3 .5 .5 .6 .7 .8 .7 .6 .5 .8 .7 .8 .7 .6
.5 .5 .3 .3 .3 .3 .3 .3 .3 .3 1.0 1.3 .9 .5 .3 .3 .3 .3 .3 .7 .7 .5 .5 .3 .3 .4 .4 .4 .3 .3 .6 .6 .5 .3 .4 .6
.4 .5 .5 .4 .4 .3 .4 .3 .3 .3 .4 1.1 .9 .6 .3 .3 .3 .2 .3 .7 .7 .5 .6 .3 .3 .3 .3 .3 .3 .7 .6 .5 .5 .4 .4 .3
.3 .4 .3 .4 .4 .4 .4 .4 .3 .3 .6 .7 .8 .5 .4 .4 .3 .3 .3 .4 .6 .4 .4 .4 .3 .3 .3 .3 .3 .4 .4 .5 .5 .4 .3 .5
.4 .4 .4 .3 .3 .3 .4 .4 .4 .4 .6 .5 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .3 .4 .3 .5 .5
.5 .4 .4 .4 .4 .5 .4 .4 .4 .4 .6 .5 .4 .4 .5 .6 .5 .5 .6 .6 .6 .6 .5 .5 .5 .5 .5 .5 .4 .4 .5 .4 .4 .4 .5 .5
.6 .6 .7 .7 .8 .7 .6 .6 .6 .6 .6 .8 .6 .5 .5 .5 .4 .5 .4 .5 .6 .6 .7 .9 .7 .6 .7 .9 1.1 .8 .9 1.0 .9 .7 .6 .6
.8 .8 .9 1.0 1.3 1.5 1.3 1.0 1.1 1.0 .9 1.0 .8 .6 .7 1.0 1.4 1.8 2.1 2.7 2.4 1.8 1.9 1.8 1.7 1.7 1.4 1.4 2.0 2.6 2.7 1.9 1.6 1.6 1.0 .8
1.1 1.2 1.3 1.2 1.2 1.4 1.5 1.6 1.7 1.0 .9 .9 1.0 1.0 1.1 1.3 1.2 1.2 1.2 1.4 1.4 1.4 1.5 2.2 2.0 2.0 1.9 1.7 1.9 1.8 1.7 1.6 1.5 1.6 1.2 1.1

Figure 51. ATOVS MEAN O-B brightness temperature differences (deg C). SEPTEMBER 2004
Channel: AMSUA-7 (300 hPa)
NOAA16, using all observations



.2	.3	.3	.3	.3	.4	.4	.4	.4	.4	.4	.4	.3	.3	.4	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.2	.2	.2	.2
.3	.3	.3	.4	.3	.3	.4	.4	.3	.4	.4	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.2	.3	.2	.2	.2	.3	.3	.3	.3	.3	.4	.4	.4
.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.3	.3	.3	.3	.3	.4	.3	.3	.3	.3	.3	.4	.4	.3	.4	.4	.3	.3	.4	.5	.4
.4	.3	.2	.3	.2	.3	.3	.3	.3	.2	.2	.3	.3	.3	.2	.2	.2	.1	.2	.2	.2	.2	.1	.2	.3	.3	.4	.4	.4	.3	.3	.3	.3	.3	.3	.3
.2	.1	.1	.0	.1	.1	.1	.2	.0	.1	.0	.1	.1	.1	.1	.0	.0	.1	.1	.2	.1	.1	.1	.1	.1	.1	.2	.2	.3	.2	.2	.2	.1	.0	.0	.1
.0	.0	.1	.0	.0	.0	.0	.0	-.1	.0	.1	.0	.0	.0	.0	-.1	-.1	.0	.0	.0	.0	-.1	.0	-.1	-.1	.0	.0	.0	-.1	.0	.0	-.1	-.2	-.2	-.1	.0
-.1	-.1	-.1	-.1	-.1	-.2	-.2	-.1	-.1	-.1	-.2	-.1	-.1	-.1	-.1	-.2	-.2	-.1	-.2	-.2	-.2	-.2	-.2	-.2	-.2	-.2	-.3	-.2	-.2	-.2	-.2	-.2	-.2	-.2	-.2	.0
-.2	-.2	-.2	-.2	-.2	-.2	-.2	-.2	-.1	-.2	-.2	-.2	-.2	-.2	-.2	-.2	-.2	-.2	-.3	-.4	-.3	-.3	-.2	-.3	-.2	-.2	-.3	-.3	-.3	-.2	-.2	-.2	-.2	-.2	-.3	-.1
-.2	-.2	-.2	-.2	-.2	-.2	-.2	-.2	-.1	-.2	-.2	-.2	-.1	-.1	-.2	-.2	-.2	-.1	-.2	-.3	-.2	-.2	-.2	-.2	-.2	-.2	-.2	-.2	-.2	-.2	-.3	-.2	-.2	-.2	-.3	-.2
-.1	-.2	-.2	-.2	-.2	-.2	-.2	-.2	-.1	-.2	-.2	-.2	-.2	-.1	-.2	-.2	-.2	-.1	-.2	-.3	-.2	-.2	-.2	-.2	-.2	-.2	-.2	-.2	-.2	-.2	-.2	-.2	-.2	-.2	-.2	-.2
-.1	-.2	-.2	-.2	-.3	-.2	-.2	-.2	-.2	-.2	-.2	-.2	-.2	-.1	-.2	-.2	-.2	-.2	-.2	-.3	-.2	-.2	-.2	-.2	-.2	-.3	-.2	-.2	-.2	-.2	-.2	-.2	-.3	-.3	-.3	-.3
.0	-.1	-.1	-.1	-.2	-.1	-.1	-.2	-.1	-.1	-.1	-.1	-.1	-.1	-.1	-.1	-.1	-.1	-.1	-.2	-.1	.0	-.1	-.1	-.1	-.1	-.1	-.1	-.1	-.1	-.1	-.1	-.1	-.1	-.1	-.2
.3	.2	.2	.2	.1	.2	.1	.1	.1	.1	.1	.1	.0	.0	.0	.0	.1	.0	.1	.0	.1	.1	.1	.1	.0	.0	.1	.1	.1	.1	.1	.1	.1	.2	.1	.1
.4	.3	.3	.2	.2	.2	.2	.2	.2	.2	.1	.2	.1	.1	.1	.1	.2	.2	.1	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.3
.2	.3	.2	.1	.1	.1	.1	.1	.0	.0	.0	.0	.0	.0	.0	.1	.1	.1	.1	.2	.2	.2	.3	.2	.2	.3	.2	.3	.3	.3	.3	.3	.2	.2	.3	.3
.0	.0	.0	-.1	-.1	-.2	-.2	-.2	-.3	-.2	-.2	-.2	-.2	-.3	-.2	-.2	-.1	-.1	-.2	-.1	-.1	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
-.3	-.3	-.3	-.2	-.2	-.3	-.3	-.3	-.3	-.3	-.3	-.3	-.3	-.4	-.4	-.4	-.4	-.3	-.3	-.3	-.2	-.2	-.2	-.2	-.3	-.2	-.2	-.1	-.2	-.2	-.2	-.2	-.2	-.2	-.2	-.2
-.1	-.1	.0	-.1	.0	-.1	-.1	-.1	-.1	-.1	-.1	-.1	-.1	-.1	-.2	-.2	-.2	-.2	-.1	-.1	.0	.0	.1	.0	-.1	-.1	.3	.0	-.1	-.1	-.1	-.1	-.1	-.1	-.1	-.1

Figure 52. ATOVS SD O-B brightness temperature differences (deg C). SEPTEMBER 2004
Channel: AMSUA-7 (300 hPa)
NOAA16, using all observations

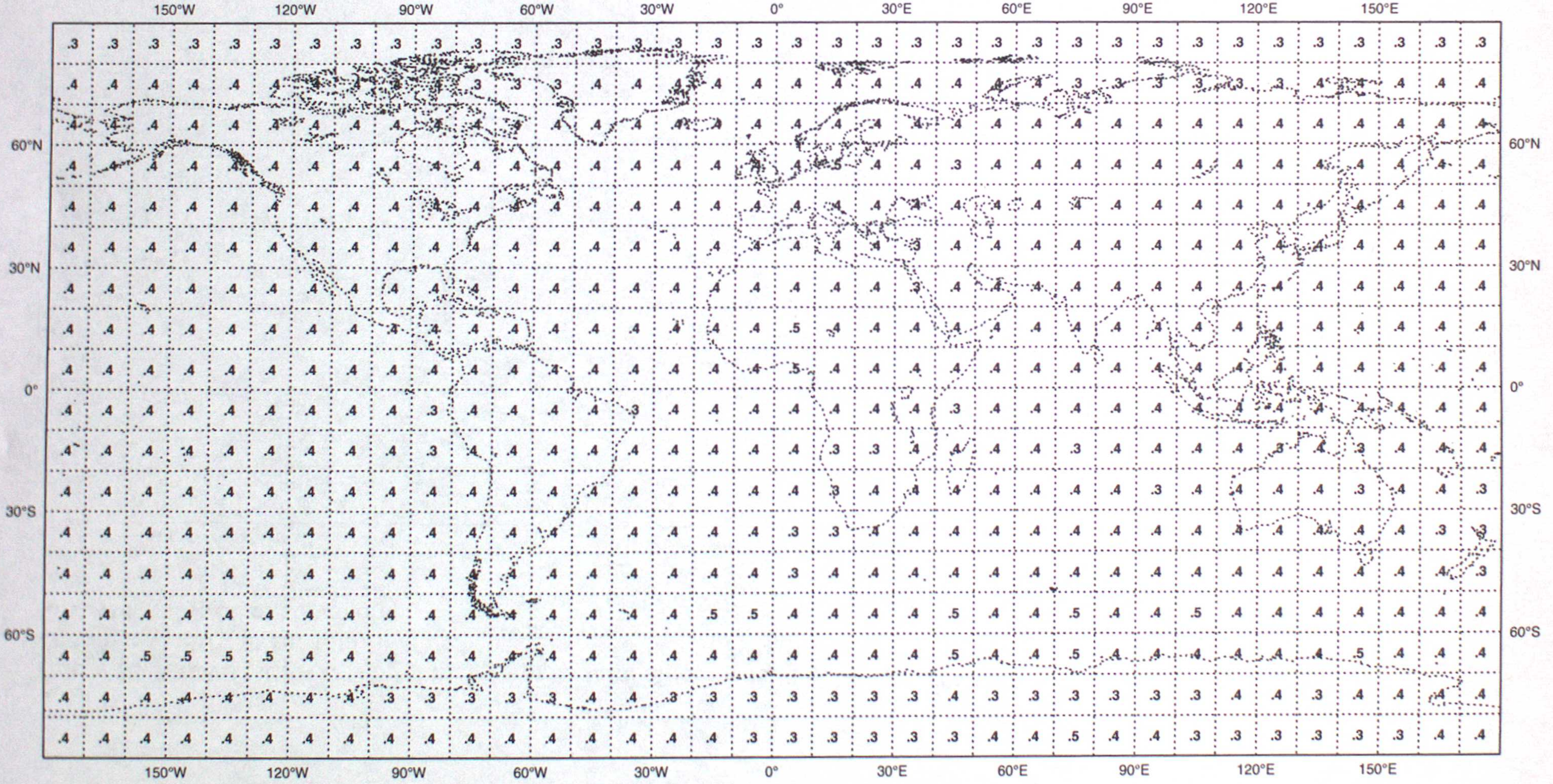

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S

Figure 53. ATOVS MEAN O-B brightness temperature differences (deg C). SEPTEMBER 2004
Channel: AMSUA-9 (100 hPa)
NOAA16, using all observations

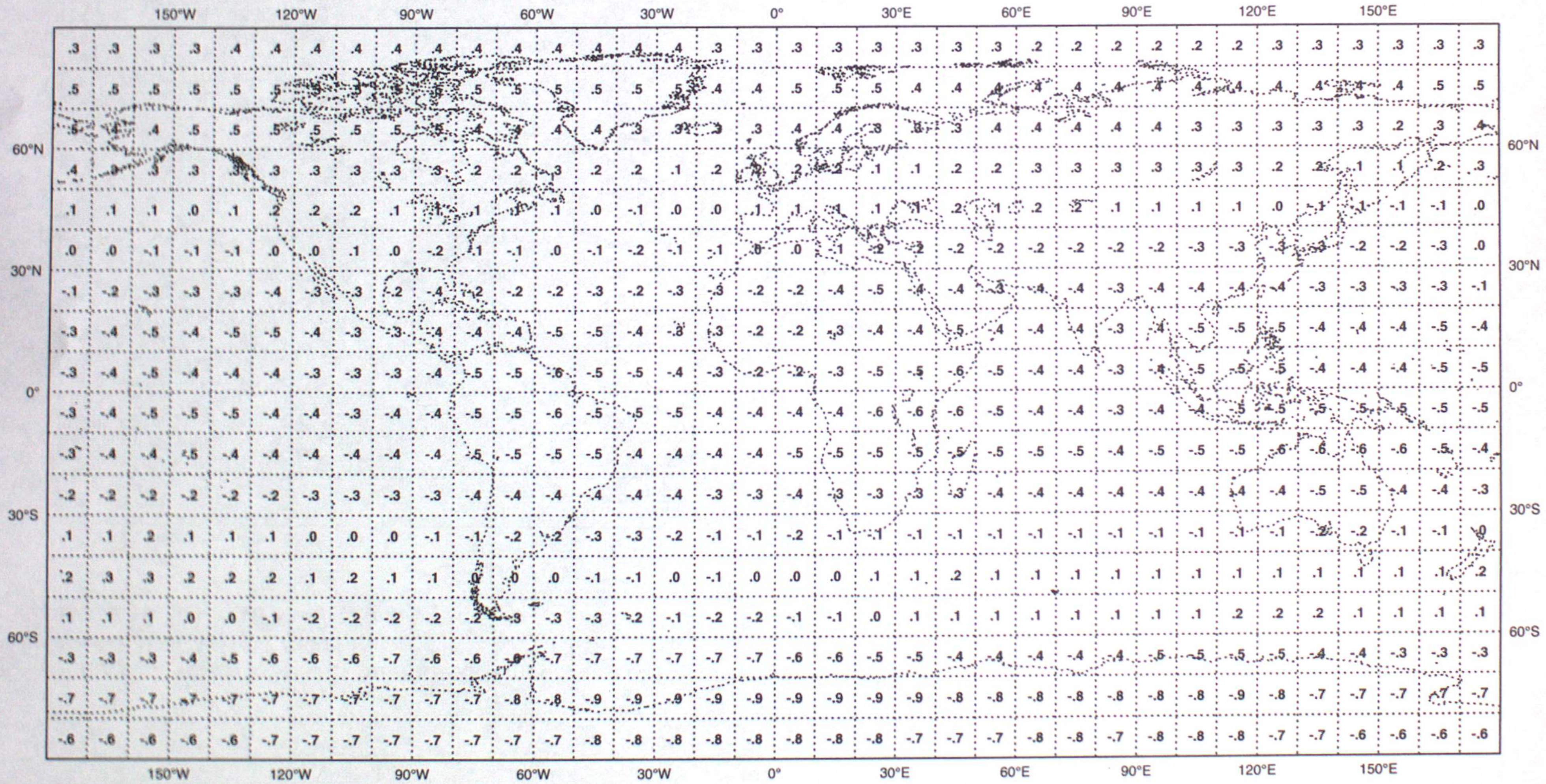

150°W 120°W 90°W 60°W 30°W 0° 30°E 60°E 90°E 120°E 150°E
60°N 30°N 0° 30°S 60°S
.3 .3 .3 .3 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .3 .3 .3 .3 .3 .3 .3 .3 .2 .2 .2 .2 .2 .2 .3 .3 .3 .3 .3 .3
.5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .4 .4 .5 .5 .5 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .5 .5
.5 .4 .4 .5 .5 .5 .5 .5 .5 .5 .4 .4 .4 .4 .3 .3 .3 .3 .4 .4 .3 .3 .3 .4 .4 .4 .4 .4 .3 .3 .3 .3 .3 .2 .3 .4
.4 .3 .3 .3 .3 .3 .3 .3 .3 .3 .2 .2 .3 .2 .2 .1 .2 .2 .2 .2 .1 .1 .2 .2 .3 .3 .3 .3 .3 .3 .2 .2 .1 .1 .2 .3
.1 .1 .1 .0 .1 .2 .2 .2 .1 .1 .1 .1 .1 .0 -.1 .0 .0 .1 .1 .1 .1 .1 .2 .1 .2 .2 .1 .1 .1 .1 .0 -.1 -.1 -.1 -.1 .0
.0 .0 -.1 -.1 -.1 .0 .0 .1 .0 -.2 .1 -.1 .0 -.1 -.2 -.1 -.1 .0 .0 -.1 -.2 -.2 -.2 -.2 -.2 -.2 -.2 -.2 -.3 -.3 -.3 -.3 -.2 -.2 -.3 .0
-.1 -.2 -.3 -.3 -.3 -.4 -.3 -.3 -.2 -.4 -.2 -.2 -.2 -.3 -.2 -.3 -.3 -.2 -.2 -.4 -.5 -.4 -.4 -.3 -.4 -.4 -.3 -.4 -.4 -.4 -.4 -.3 -.3 -.3 -.3 -.1
-.3 -.4 -.5 -.4 -.5 -.5 -.4 -.3 -.3 -.4 -.4 -.4 -.5 -.5 -.4 -.3 -.3 -.2 -.2 -.3 -.4 -.4 -.5 -.4 -.4 -.4 -.3 -.4 -.5 -.5 -.5 -.4 -.4 -.4 -.5 -.4
-.3 -.4 -.5 -.4 -.4 -.4 -.3 -.3 -.3 -.4 -.5 -.5 -.6 -.5 -.5 -.4 -.3 -.2 -.2 -.3 -.5 -.5 -.6 -.5 -.4 -.4 -.3 -.4 -.5 -.5 -.5 -.4 -.4 -.4 -.5 -.5
-.3 -.4 -.5 -.5 -.5 -.4 -.4 -.3 -.4 -.4 -.5 -.5 -.6 -.5 -.5 -.5 -.4 -.4 -.4 -.4 -.6 -.6 -.6 -.5 -.4 -.4 -.3 -.4 -.4 -.5 -.5 -.5 -.5 -.5 -.5 -.5
-.3 -.4 -.4 -.5 -.4 -.4 -.4 -.4 -.4 -.4 -.5 -.5 -.5 -.5 -.4 -.4 -.4 -.4 -.5 -.5 -.5 -.5 -.5 -.5 -.5 -.5 -.4 -.5 -.5 -.5 -.6 -.6 -.6 -.6 -.5 -.4
-.2 -.2 -.2 -.2 -.2 -.2 -.3 -.3 -.3 -.3 -.4 -.4 -.4 -.4 -.4 -.4 -.3 -.3 -.4 -.3 -.3 -.3 -.3 -.4 -.4 -.4 -.4 -.4 -.4 -.4 -.4 -.5 -.5 -.4 -.4 -.3
.1 .1 .2 .1 .1 .1 .0 .0 .0 -.1 -.1 -.2 -.2 -.3 -.3 -.2 -.1 -.1 -.2 -.1 -.1 -.1 -.1 -.1 -.1 -.1 -.1 -.1 -.1 -.1 -.1 -.2 -.2 -.1 -.1 .0
.2 .3 .3 .2 .2 .2 .1 .2 .1 .1 .0 .0 .0 -.1 -.1 .0 -.1 .0 .0 .0 .1 .1 .2 .1 .1 .1 .1 .1 .1 .1 .1 .1 .1 .1 .1 .2
.1 .1 .1 .0 .0 -.1 -.2 -.2 -.2 -.2 -.2 -.3 -.3 -.3 -.2 -.1 -.2 -.2 -.1 -.1 .0 .1 .1 .1 .1 .1 .1 .1 .1 .2 .2 .2 .1 .1 .1 .1
-.3 -.3 -.3 -.4 -.5 -.6 -.6 -.6 -.7 -.6 -.6 -.6 -.7 -.7 -.7 -.7 -.7 -.7 -.6 -.6 -.5 -.5 -.4 -.4 -.4 -.4 -.4 -.5 -.5 -.5 -.5 -.4 -.4 -.3 -.3 -.3
-.7 -.7 -.7 -.7 -.7 -.7 -.7 -.7 -.7 -.7 -.7 -.8 -.8 -.9 -.9 -.9 -.9 -.9 -.9 -.9 -.9 -.9 -.8 -.8 -.8 -.8 -.8 -.8 -.8 -.9 -.8 -.7 -.7 -.7 -.7 -.7
-.6 -.6 -.6 -.6 -.6 -.7 -.7 -.7 -.7 -.7 -.7 -.7 -.7 -.8 -.8 -.8 -.8 -.8 -.8 -.8 -.8 -.7 -.7 -.7 -.8 -.8 -.7 -.8 -.8 -.8 -.7 -.7 -.6 -.6 -.6 -.6

Figure 54. ATOVS SD O-B brightness temperature differences (deg C). SEPTEMBER 2004
Channel: AMSUA-9 (100 hPa)
NOAA16, using all observations

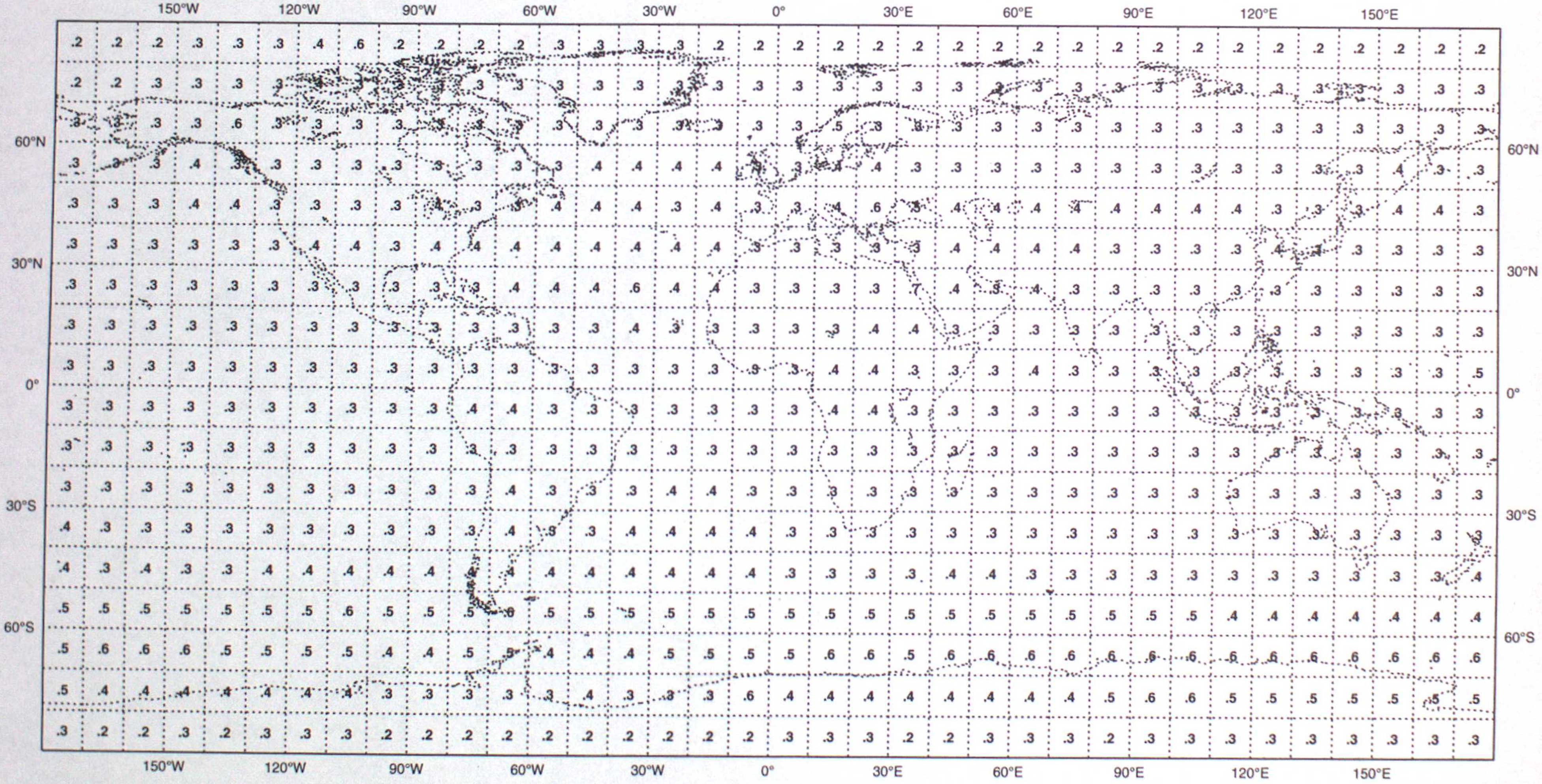

150°W 120°W 90°W 60°W 30°W 0° 30°E 60°E 90°E 120°E 150°E
60°N
30°N
0°
30°S
60°S
.2 .2 .2 .3 .3 .3 .4 .6 .2 .2 .2 .2 .3 .3 .3 .3 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2
.2 .2 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .2 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3
.3 .3 .3 .3 .6 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .5 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3
.3 .3 .3 .4 .3 .3 .3 .3 .3 .3 .3 .3 .3 .4 .4 .4 .4 .3 .3 .4 .4 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .4 .3 .3
.3 .3 .3 .4 .4 .3 .3 .3 .3 .4 .3 .3 .4 .4 .4 .3 .4 .3 .3 .4 .6 .5 .4 .4 .4 .4 .4 .4 .4 .4 .3 .3 .3 .4 .4 .3
.3 .3 .3 .3 .3 .3 .4 .4 .3 .4 .4 .4 .4 .4 .4 .4 .4 .3 .3 .3 .3 .3 .4 .4 .4 .4 .3 .3 .3 .3 .4 .3 .3 .3 .3 .3
.3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .4 .4 .4 .6 .4 .4 .3 .3 .3 .3 .7 .4 .3 .4 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3
.3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .4 .3 .3 .3 .3 .3 .4 .4 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3
.3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .4 .4 .3 .3 .3 .4 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .5
.3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .4 .4 .3 .3 .3 .3 .3 .3 .3 .4 .4 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3
.3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3
.3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .4 .3 .3 .3 .4 .4 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3
.4 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .4 .3 .3 .4 .4 .4 .4 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3
.4 .3 .4 .3 .3 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .3 .3 .3 .3 .4 .4 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .4
.5 .5 .5 .5 .5 .5 .5 .6 .5 .5 .5 .6 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .4 .4 .4 .4 .4 .4 .4
.5 .6 .6 .6 .5 .5 .5 .5 .4 .4 .5 .5 .4 .4 .4 .5 .5 .5 .5 .6 .6 .5 .6 .6 .6 .6 .6 .6 .6 .6 .6 .6 .6 .6 .6 .6
.5 .4 .4 .4 .4 .4 .4 .4 .3 .3 .3 .3 .3 .4 .3 .3 .3 .6 .4 .4 .4 .4 .4 .4 .4 .4 .5 .6 .6 .5 .5 .5 .5 .5 .5 .5
.3 .2 .2 .3 .2 .3 .3 .3 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .3 .3 .3 .2 .2 .3 .3 .3 .2 .3 .3 .3 .3 .3 .3 .3 .3 .3

TABLE 8

MONTHLY MONITORING OF MARINE SURFACE OBSERVATIONS (COSNA)
DATA TYPE:- DRIFTER
MONITORING CENTRE: EXETER
MONTH: Sep 2004

Monitoring procedures		
Period		:One calendar month.
Data monitored		:Reports from each unique identifier for drifting buoy.
Area monitored		:10°N - 80°N, 85°W - 0°W
Standard of comparison		:Background field from UKMO global model.
Position		:Average latitude and longitude for period.
Observation times		:All hours combined.
Elements monitored		:Mean sea-level pressure (hPa) :Wind speed (m s^{-1}) :Wind direction (degrees)
Parameters monitored		
	:NOBS	:Number of observations received excluding duplicates.
	:NGE	:Number of observations with gross errors.
	:PGE	:Percentage of observations with gross errors.
	:SD	:SD of difference of observations from background values excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values excluding those with gross errors. **N.B. A positive bias indicates the wind observation is veered to the background**
	:RMS	:Root Mean Square difference of observations from background values excluding those with gross errors
GROSS ERROR LIMITS	:15 hPa (pressure) :25 m s^{-1} (Vector Wind)	

N.B. Observations of wind direction are only included in the wind direction statistics if the observed OR background wind speed > 5 m s^{-1}

IDENTIFIER	LAT.	LONG.	ELEM	NOBS	PGE	%REJ	SD	BIAS	RMS
13531	22.3	-33.9	P	695	0	2	0.6	0.1	0.6
13533	23.6	-67.7	P	686	0	1	0.8	0.9	1.2
13600	22.2	-46.1	P	439	0	8	1.2	1.6	2.0
13602	19.5	-42.7	P	394	0	1	1.1	0.7	1.3
41504	40.3	-59.0	P	634	0	69	1.0	-0.1	1.0
41520	24.2	-64.6	P	1099	0	67	0.6	0.1	0.6
41521	18.8	-57.5	P	994	0	70	0.9	-1.7	1.9
41539	24.1	-68.3	P	531	0	0	0.8	1.1	1.4
41540	35.9	-71.6	P	542	0	1	1.2	0.9	1.5
41541	24.7	-76.5	P	501	0	1	1.1	1.4	1.7
41542	28.1	-70.1	P	511	0	1	0.8	0.4	0.9
41543	24.4	-68.1	P	507	0	0	0.9	0.5	1.0
41544	23.3	-65.4	P	509	0	0	0.7	0.8	1.1
41545	25.1	-67.4	P	524	0	0	0.8	0.9	1.2
41546	15.9	-58.9	P	1197	0	54	0.8	1.3	1.5
41547	11.2	-50.6	P	939	3	47	2.5	1.4	2.9
41548	16.1	-50.8	P	909	0	39	0.9	1.0	1.3
41549	18.0	-56.9	P	946	0	41	0.8	1.2	1.5
41550	12.2	-57.4	P	1129	1	55	1.2	1.2	1.7
41551	15.6	-48.0	P	1200	0	57	0.8	1.0	1.3
41590	27.7	-60.6	P	497	0	0	0.6	1.4	1.5
41595	24.4	-42.7	P	495	0	1	0.7	1.3	1.4
41600	38.2	-43.7	P	622	1	11	1.1	-0.3	1.1
41601	40.9	-40.1	P	615	0	1	0.8	-0.1	0.8
41631	30.0	-70.2	P	403	0	2	1.1	1.5	1.8
41646	28.5	-77.4	P	376	1	2	1.3	1.2	1.8
41655	26.1	-57.6	P	433	0	0	0.7	0.9	1.2
41663	17.3	-62.3	P	994	0	67	0.8	-0.8	1.1
41664	19.5	-50.9	P	1260	0	80	1.0	-1.5	1.8
41665	14.5	-48.1	P	1235	0	71	0.8	-1.1	1.3
41666	12.5	-51.0	P	1243	0	72	1.0	-1.0	1.4
41919	23.2	-70.8	P	226	93	99	5.0	8.4	9.8
41920	23.9	-71.8	P	226	3	4	1.1	0.9	1.4
41921	23.5	-71.0	P	200	1	4	0.9	1.1	1.4
41922	21.8	-71.4	P	239	2	7	1.4	0.3	1.4
41923	23.6	-71.2	P	139	1	4	1.0	0.9	1.4
41924	23.7	-71.3	P	208	1	4	1.1	0.9	1.4
41925	24.8	-72.7	P	226	1	4	1.7	0.6	1.8
41926	22.6	-67.9	P	244	1	4	1.0	0.9	1.3
41927	23.6	-70.8	P	227	2	7	1.8	0.9	2.0
41928	20.8	-69.2	P	239	1	4	1.1	0.7	1.3
41929	25.3	-67.8	P	251	0	3	1.3	0.6	1.4
41930	23.5	-67.0	P	239	1	4	1.3	0.8	1.6
41931	26.3	-73.4	P	187	1	6	1.5	0.7	1.7
41932	25.0	-68.2	P	252	0	4	1.1	0.5	1.2
41933	23.6	-71.0	P	227	2	4	1.4	0.8	1.7
41934	23.9	-71.2	P	259	1	6	0.9	0.5	1.1
41935	23.6	-70.4	P	232	0	4	1.0	0.6	1.2
41936	23.6	-71.1	P	220	0	4	1.1	1.0	1.5
41937	23.9	-71.9	P	238	0	4	1.1	0.7	1.3
41938	21.6	-71.4	P	108	1	7	1.3	0.8	1.5
41939	25.9	-74.4	P	238	3	10	1.6	0.1	1.6
41941	25.6	-71.4	P	251	3	11	2.1	0.1	2.1
41942	26.8	-73.8	P	254	0	8	1.8	1.4	2.3
41943	26.8	-73.8	P	262	1	7	2.6	2.0	3.3
41944	26.8	-73.8	P	238	0	2	1.6	1.2	2.0
44546	48.6	-8.9	P	691	0	29	0.5	0.0	0.5
44547	55.6	-38.4	P	613	0	1	1.0	-0.5	1.1
44549	46.8	-46.3	P	618	1	2	0.9	0.1	0.9
44551	55.2	-14.0	P	623	0	4	1.3	1.0	1.6

44603	62.1	-7.9	P	688	0	3	1.0	0.2	1.0
44611	68.6	-2.3	P	65	0	0	0.5	-0.1	0.5
44612	56.3	-20.8	P	594	0	1	0.7	-0.1	0.8
44614	60.2	-29.0	P	639	0	3	1.0	-0.6	1.2
44617	48.9	-40.7	P	606	0	2	1.3	0.2	1.3
44623	29.0	-49.9	P	661	0	2	0.8	-0.2	0.8
44624	48.9	-38.0	P	566	0	4	1.6	0.7	1.7
44625	61.6	-38.8	P	996	0	37	0.9	-0.2	0.9
44626	44.1	-47.2	P	206	1	1	0.8	0.1	0.8
44627	46.3	-23.7	P	562	0	1	0.7	0.1	0.7
44628	34.4	-22.6	P	1010	0	37	0.6	-0.7	1.0
44630	28.9	-40.7	P	670	0	4	0.7	0.4	0.8
44721	53.5	-49.6	P	690	0	2	0.9	-0.1	0.9
44742	45.4	-18.2	P	560	0	1	0.5	-0.2	0.5
44743	46.3	-15.0	P	534	0	1	0.5	0.1	0.5
44745	51.6	-20.3	P	897	0	25	0.8	0.2	0.8
44747	50.7	-11.1	P	623	0	2	0.5	0.1	0.5
44761	51.6	-21.2	P	524	0	2	1.5	0.2	1.5
44765	38.9	-44.1	P	165	0	2	0.5	-0.6	0.8
44766	50.9	-16.0	P	581	0	1	0.6	-0.4	0.7
44771	46.1	-6.3	P	34	0	15	0.4	-0.2	0.5
44773	61.6	-38.2	P	279	0	24	0.7	0.0	0.7
44777	22.8	-43.4	P	259	0	16	0.9	-0.1	0.9
44778	28.7	-31.6	P	263	0	20	0.6	0.0	0.6
48613	75.2	-19.2	P	268	0	1	1.3	0.4	1.4
62514	30.2	-32.8	P	174	0	0	0.7	0.1	0.7
62556	41.2	-14.3	P	683	1	2	0.4	-0.3	0.5
62557	43.3	-12.7	P	687	1	3	0.5	-0.1	0.5
62558	40.5	-18.7	P	689	0	3	0.5	-0.2	0.5
62560	42.1	-15.2	P	620	0	1	0.5	0.5	0.7
62561	46.6	-25.6	P	633	0	3	0.9	-0.2	0.9
62562	51.7	-22.2	P	745	0	18	0.9	0.6	1.1
62563	54.2	-21.0	P	683	0	3	0.7	-0.2	0.7
62564	45.9	-19.4	P	685	0	2	0.5	0.0	0.5
62565	55.3	-15.6	P	672	0	3	0.7	-0.2	0.7
62566	55.1	-30.7	P	682	0	2	1.0	-0.2	1.0
62694	50.0	-13.3	P	537	0	1	0.6	0.3	0.6
62712	63.2	-9.0	P	10	0	0	0.4	-0.8	0.9
62801	28.7	-28.2	P	664	0	5	0.5	0.3	0.6
64524	62.4	-40.2	P	831	1	28	0.8	0.0	0.8
64608	61.1	-43.1	P	423	0	0	0.9	-1.2	1.5
65597	50.3	-32.1	P	353	0	25	1.1	-0.4	1.2
65598	57.1	-25.0	P	236	5	41	3.3	0.5	3.3
65599	57.3	-23.3	P	154	1	18	0.7	-0.2	0.7
65600	59.5	-29.4	P	165	1	16	1.0	-0.2	1.0

IDENTIFIER	LAT.	LONG.	ELEM	NOBS	PGE	%REJ	SD	BIAS	RMS
13600	22.2	-46.1	SPEED	409	2	100	2.0	-2.4	3.2
13602	19.5	-42.7	SPEED	390	0	100	1.8	-1.9	2.7
41539	24.1	-68.3	SPEED	519	0	100	1.8	-1.0	2.1
41540	35.9	-71.6	SPEED	514	0	100	2.6	1.1	2.8
41541	24.7	-76.5	SPEED	432	0	100	2.2	0.1	2.2
41542	28.1	-70.1	SPEED	480	0	100	2.4	-0.2	2.4
41543	24.4	-68.1	SPEED	492	0	100	2.1	-0.4	2.2
41544	23.3	-65.4	SPEED	487	0	100	2.2	0.2	2.2
41545	25.1	-67.4	SPEED	492	0	100	2.2	-0.4	2.2
41590	27.7	-60.6	SPEED	189	0	100	5.5	4.3	7.0
41595	24.4	-42.7	SPEED	489	0	100	1.7	-1.7	2.4
41646	28.5	-77.4	SPEED	2	0	100	0.2	-1.2	1.3
41919	23.2	-70.8	SPEED	181	2	100	4.5	11.7	12.5
41920	23.9	-71.8	SPEED	9	44	100	3.8	8.8	9.6
41921	23.5	-71.0	SPEED	183	2	100	2.6	1.1	2.8
41922	21.8	-71.4	SPEED	218	1	100	5.6	1.2	5.7
41923	23.6	-71.2	SPEED	12	17	100	10.2	7.6	12.7

41924	23.7	-71.3	SPEED	11	45	100	5.9	1.6	6.1
41925	24.8	-72.7	SPEED	216	1	100	4.8	-4.1	6.3
41926	22.6	-67.9	SPEED	233	0	100	3.5	-1.1	3.7
41927	23.6	-70.8	SPEED	8	50	100	1.7	-5.7	6.0
41928	20.8	-69.2	SPEED	2	100	0			
41929	25.3	-67.8	SPEED	4	75	100	0.0	5.8	5.8
41930	23.5	-67.0	SPEED	1	0	100	0.0	-1.5	1.5
41931	26.3	-73.4	SPEED	2	0	100	5.4	-3.0	6.1
41933	23.6	-71.0	SPEED	3	33	100	2.1	21.1	21.2
41934	23.9	-71.2	SPEED	4	25	100	1.8	-2.4	3.0
41935	23.6	-70.4	SPEED	3	0	100	1.6	9.8	9.9
41936	23.6	-71.1	SPEED	9	0	100	1.8	8.7	8.9
41937	23.9	-71.9	SPEED	2	50	100	0.0	0.8	0.8
41938	21.6	-71.4	SPEED	2	0	100	14.7	9.5	17.6
41939	25.9	-74.4	SPEED	2	0	100	0.1	8.3	8.3
41941	25.6	-71.4	SPEED	4	50	100	2.7	-0.4	2.7
44546	48.6	-8.9	SPEED	685	0	100	2.3	2.0	3.1
48613	75.2	-19.2	SPEED	266	2	100	3.5	-4.7	5.9
62565	55.3	-15.6	SPEED	564	0	100	2.5	0.8	2.6
62566	55.1	-30.7	SPEED	595	0	100	2.1	0.1	2.1

IDENTIFIER	LAT.	LONG.	ELEM	NOBS	PGE	%REJ	SD	BIAS	RMS
13600	22.2	-46.1	DIRN.	193	4	0	38.8	23.7	45.5
13602	19.5	-42.7	DIRN.	229	0	0	30.5	-14.0	33.6
41539	24.1	-68.3	DIRN.	381	0	0	15.7	-8.1	17.6
41540	35.9	-71.6	DIRN.	381	0	0	17.3	-4.7	17.9
41541	24.7	-76.5	DIRN.	350	0	0	16.9	-15.0	22.7
41542	28.1	-70.1	DIRN.	273	0	0	20.3	18.7	27.6
41543	24.4	-68.1	DIRN.	384	0	0	12.6	16.7	20.9
41544	23.3	-65.4	DIRN.	360	1	0	24.5	18.2	30.5
41545	25.1	-67.4	DIRN.	356	0	0	13.4	6.9	15.0
41590	27.7	-60.6	DIRN.	56	0	0	37.0	-0.3	37.0
41595	24.4	-42.7	DIRN.	278	0	0	20.1	-28.4	34.8
41919	23.2	-70.8	DIRN.	173	2	0	20.9	15.2	25.8
41920	23.9	-71.8	DIRN.	9	44	0	94.5	-8.3	94.9
41921	23.5	-71.0	DIRN.	173	2	0	23.9	30.9	39.0
41922	21.8	-71.4	DIRN.	164	2	0	27.8	13.4	30.9
41923	23.6	-71.2	DIRN.	9	22	0	64.5	56.7	85.9
41924	23.7	-71.3	DIRN.	10	50	0	6.8	15.4	16.9
41925	24.8	-72.7	DIRN.	67	3	0	24.9	6.5	25.8
41926	22.6	-67.9	DIRN.	198	1	0	21.2	8.9	23.0
41927	23.6	-70.8	DIRN.	5	80	0	0.0	-33.5	33.5
41928	20.8	-69.2	DIRN.	2	100	0			
41929	25.3	-67.8	DIRN.	4	75	0	0.0	-7.2	7.2
41931	26.3	-73.4	DIRN.	1	0	0	0.0	160.0	160.0
41933	23.6	-71.0	DIRN.	3	33	0	26.5	-2.0	26.6
41934	23.9	-71.2	DIRN.	4	25	0	127.4	62.1	141.7
41935	23.6	-70.4	DIRN.	2	0	0	32.6	81.3	87.5
41936	23.6	-71.1	DIRN.	8	0	0	24.7	10.8	26.9
41937	23.9	-71.9	DIRN.	2	50	0	0.0	*****	114.3
41938	21.6	-71.4	DIRN.	1	0	0	0.0	19.4	19.4
41939	25.9	-74.4	DIRN.	2	0	0	69.7	*****	124.5
41941	25.6	-71.4	DIRN.	3	67	0	0.0	-58.1	58.1
44546	48.6	-8.9	DIRN.	496	0	0	15.1	11.2	18.8
48613	75.2	-19.2	DIRN.	24	21	0	156.2	-43.6	162.2
62565	55.3	-15.6	DIRN.	485	0	0	16.5	-11.2	19.9
62566	55.1	-30.7	DIRN.	506	0	0	16.9	-4.9	17.6

TABLE 9

MONTHLY MONITORING OF AIRCRAFT OBSERVATIONS (COSNA)
MONITORING CENTRE: EXETER
MONTH: Sep 2004

Monitoring procedures:

Period :One calendar month.

Data monitored :Statistics for each airline carrier.

Area monitored :40°N - 70°N, 60°W - 0°W.

Standard of comparison :Background field from UKMO global model.

Observation times :All hours combined.

Level(s) monitored :300.0 - 150.0 hPa

Elements monitored :TEMP in °C ; WIND in m s^{-1}

Parameters monitored :N REP. :Number of observations received excluding duplicates.

:PG :Percentage of observations with gross errors.

:PR :Percentage of observations rejected by quality control including rejections from the duplicate check.

:PC :Percentage of observations with calm winds.

:RMS :Root Mean Square difference of observations from background values excluding those with gross errors in Temperature & vector wind.

:BIAS :Mean difference of observations from background values excluding those with gross errors in Temperature & vector wind.

GROSS ERROR LIMITS :10.0 °C ; 60 m s^{-1} Vector Wind

SELECTION CRITERIA :N REP $\geq$ 20

NB: All American ACARS data are grouped together and statistics are shown at the bottom of the table as "US ACARS". All ADS reports are similarly grouped together.

	TEMPERATURE					WIND					
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
AAL	475	0	6	1.6	0.4	381	0	6	0	8.6	0.8
ACA	735	0	2	1.7	0.0	566	0	2	0	7.1	0.8
AEA	397	0	2	1.5	0.1	341	0	5	0	8.4	0.3
AEL	227	1	6	1.4	0.0	227	0	7	0	8.1	-0.1
AFL	397	1	5	2.1	0.4	300	1	3	0	8.2	-0.1
AFR	559	0	3	1.4	0.1	561	0	6	0	8.8	0.2
AJM	210	0	3	1.4	-0.3	184	1	6	0	9.2	0.1
AMT	48	0	13	2.3	0.2	46	0	11	0	7.7	0.9
AMX	296	0	2	1.3	0.2	279	0	5	0	10.6	0.4
AZA	379	0	2	1.4	0.0	324	0	3	0	8.5	0.5
BAL	265	0	6	1.2	-0.1	258	1	9	0	8.6	0.0
BAW	322	0	16	1.8	-0.5	254	0	19	0	6.7	0.1
BPA	167	1	10	2.8	1.4	164	0	6	0	7.7	0.0
BWA	159	1	4	1.5	0.1	141	0	6	0	8.8	0.5
CFC	25	0	8	1.4	-0.3	27	0	19	0	14.0	-1.8
CFG	405	0	2	1.2	0.0	362	0	5	0	7.9	0.1
CKS	129	0	6	2.3	0.3	106	1	7	0	10.8	-0.1
CLX	180	1	4	1.6	-0.5	136	1	5	0	7.6	-0.4
COA	165	1	40	1.5	0.0	142	0	44	0	8.5	-0.2
CRL	229	0	3	1.6	0.8	218	0	6	0	9.0	-0.6
CUB	101	0	1	1.3	0.1	95	0	7	0	11.0	-1.2
DAL	853	0	5	1.6	-0.4	698	0	7	0	8.0	0.4
DHL	69	0	100	6.5	-6.4	51	0	27	0	13.0	1.6
DLH	363	0	12	1.6	0.1	351	0	13	0	7.0	0.1
DRD	106	2	4	1.5	-0.2	106	0	9	0	9.1	-1.7
EDW	52	0	6	2.7	0.4	48	0	13	0	8.7	-1.7
EEZ	44	0	5	1.6	-0.6	43	0	12	0	11.2	0.7
EIA	125	0	11	1.4	0.1	125	0	100	0	20.9	7.0
ELY	81	0	0	1.4	0.5	70	0	3	0	8.3	0.3
ETH	42	0	5	1.5	0.0	35	0	3	0	5.0	0.6
EUK	21	0	5	2.3	-0.3	22	0	0	0	5.0	-0.1
FCA	148	1	3	1.0	0.2	138	1	7	0	8.8	0.3
FDX	354	1	29	1.6	0.3	302	0	27	0	7.3	0.3
FIN	209	1	5	1.6	-0.1	164	0	4	0	8.4	0.3
FWI	264	0	4	1.7	-0.4	260	0	8	0	10.2	-0.9
GCO	47	0	9	1.1	0.2	50	0	40	0	6.2	0.4
GRL	53	0	0	1.4	-0.3	47	0	0	0	4.6	0.9
GTI	94	0	6	2.1	0.7	93	0	8	0	6.9	0.2
HXL	158	0	2	1.4	-0.2	151	0	4	0	7.5	0.0
IBE	1335	1	5	1.5	0.0	1329	0	7	0	9.3	-0.2
ICE	625	1	3	1.5	0.2	482	0	3	0	6.9	0.3
ISR	30	0	3	1.9	0.0	21	0	0	0	4.9	0.9
IWD	212	1	3	1.5	0.0	210	0	4	0	8.3	-0.1
KLM	760	0	2	1.8	0.1	600	0	3	0	7.8	0.2
LAN	24	0	8	1.2	0.0	24	0	13	0	6.4	1.0
LDI	243	2	2	1.2	0.0	224	0	4	0	8.8	0.7
LOT	171	0	3	2.0	-0.9	138	0	2	0	6.4	0.6
LTU	552	0	4	1.5	0.0	480	0	6	0	7.8	0.6
MMZ	35	0	3	1.5	-0.9	33	0	9	0	8.1	1.7
MON	30	0	10	1.6	0.1	24	0	13	0	4.9	-0.2
MPD	229	0	0	1.3	0.3	224	0	2	0	7.0	0.7
MPH	328	0	3	1.9	-0.8	270	0	2	0	7.4	0.1
MYT	239	0	3	1.8	-0.1	181	1	4	0	8.5	0.1
NAO	35	0	0	1.4	-0.6	32	0	3	0	8.7	0.0
NCA	41	0	0	1.2	0.4	32	0	6	0	8.4	-0.1
NWA	1137	1	3	2.0	0.3	1105	0	3	0	7.9	0.4
OAE	166	1	8	1.7	-0.1	124	1	55	0	20.7	8.4
OOM	87	1	7	2.4	-1.1	78	0	3	0	7.0	-0.6
PAC	76	1	4	1.4	0.1	69	0	6	0	9.1	-1.0

		TEMPERATURE						WIND			
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
PLM	162	1	4	1.6	1.2	152	0	6	0	8.7	0.7
RAM	196	1	2	1.7	0.9	158	0	3	0	9.0	-0.5
RCH	139	0	100	3.3	-1.1	126	0	100	0	14.2	1.4
RRR	54	2	6	1.9	-0.2	55	0	2	0	6.4	0.0
RZO	255	0	1	1.1	-0.4	239	0	3	0	6.8	0.5
SEU	95	0	2	1.1	0.2	91	0	3	0	5.8	1.0
SSV	37	0	3	2.0	0.5	29	0	10	0	12.7	1.4
TAP	210	0	3	1.4	-0.3	190	1	6	0	9.2	1.3
TSC	298	1	2	1.6	-0.3	239	0	1	0	4.9	0.7
UAL	139	1	50	2.3	-1.1	112	1	54	0	10.7	2.0
UPS	577	1	44	1.7	0.4	547	0	43	0	7.8	0.1
VIR	143	0	3	1.7	-0.1	122	1	5	0	8.2	1.0
VVJ	25	0	4	1.4	0.2	25	0	4	0	7.5	-0.2
WOA	142	0	6	1.8	0.5	127	1	9	0	9.2	0.2
XLA	75	0	4	0.9	0.3	73	0	8	0	8.8	-0.3

		TEMPERATURE						WIND			
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
EU	30161	0	18	1.2	0.3	30161	0	18	0	4.6	0.3
TN	20	0	5	2.3	0.8	21	0	0	0	7.7	-1.5

		TEMPERATURE						WIND			
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
N	318	0	4	2.3	0.4	276	0	2	0	7.5	0.5
US ACARS	19627	0	29	1.5	0.3	19627	0	28	0	5.4	0.3

TABLE 10

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)
MONITORING CENTRE: EXETER
MONTH: Sep 2004

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from selected radiosonde TEMPs.

Area monitored :0°N - 90°N, 100°W - 40°E

Standard of comparison :Background field from UKMO global model.

Position :Average latitude and longitude for period.

Observation times :00, 12 UTC.

Level monitored :100 hPa.

Element monitored :GEOPOTENTIAL HEIGHT in metres

Parameters monitored :NUM OBS :Number of observations available at level shown during period.

:NUM GROSS :Number of gross errors at level shown during period.

:SD :SD of difference of observations from background values at level shown excluding those with gross errors.

:BIAS :Mean difference of observations from background values at level shown excluding those with gross errors.

GROSS ERROR LIMITS :Defined in Appendix I.1

WMO IDENT	OBS TIME	ELM	LEV	NUM OBS	NUM GROSS	SD	RMS	BIAS
DBBH	00	Z	100	19	0	10.2	17.6	14.4
DBBH	12	Z	100	17	0	14.7	20.6	14.5
DBLK	12	Z	100	25	0	13.3	17.2	10.8
EBUQ	12	Z	100	18	0	16.1	21.1	13.7
ELML7	00	Z	100	7	0	10.2	15.4	11.6
ELML7	12	Z	100	7	0	6.9	24.0	23.0
FQFL	00	Z	100	5	0	34.5	43.8	-27.0
FQFL	12	Z	100	9	0	49.8	49.8	-2.0
FQFM	00	Z	100	6	0	11.8	24.5	21.5
FQFM	12	Z	100	8	0	12.5	40.7	38.8
KHRH	00	Z	100	8	0	6.3	28.3	27.6
KHRH	12	Z	100	8	0	42.6	49.8	25.8
KRPD	00	Z	100	4	1	22.0	51.2	46.3
KRPD	12	Z	100	3	0	1.7	7.5	7.3
LDWR	00	Z	100	24	0	9.9	10.0	1.5
LDWR	12	Z	100	20	0	12.5	12.9	-3.2
OXVH2	00	Z	100	2	0	5.5	17.4	16.5
OXVH2	12	Z	100	3	0	5.6	30.8	30.3
OXYH2	00	Z	100	6	0	3.8	30.4	30.2
OXYH2	12	Z	100	4	0	10.4	31.8	30.0
V2XM	00	Z	100	5	0	10.9	42.2	40.8
V2XM	12	Z	100	3	0	18.3	57.3	54.3
WAAH	00	Z	100	1	0	0.0	8.0	-8.0
WAAH	12	Z	100	4	0	6.4	17.7	16.5
WPKD	00	Z	100	8	0	18.6	19.9	7.0
WPKD	12	Z	100	11	0	6.6	12.8	11.0
ZCBP6	00	Z	100	8	0	17.5	39.3	35.3
ZCBP6	12	Z	100	7	0	39.7	52.3	34.0
03953	00	Z	100	29	0	39.6	40.0	5.4
03953	12	Z	100	27	0	50.7	56.9	25.9
04018	00	Z	100	29	0	9.0	23.9	22.1
04018	12	Z	100	28	0	8.9	26.5	25.0
04220	00	Z	100	25	1	35.1	35.8	7.0
04220	12	Z	100	25	0	8.7	15.5	12.9
04270	00	Z	100	27	0	9.0	29.2	27.7
04270	12	Z	100	27	0	8.7	24.8	23.2
04339	00	Z	100	27	0	12.1	17.3	12.4
04339	12	Z	100	24	1	13.5	15.4	7.4
04360	00	Z	100	27	0	9.9	21.5	19.1
04360	12	Z	100	24	0	13.8	22.3	17.5
08001	00	Z	100	23	1	25.1	25.3	-2.6
08001	12	Z	100	24	0	17.1	17.5	3.3
08508	00	Z	100	28	0	9.3	13.7	10.0
08508	12	Z	100	28	0	9.9	11.4	5.7
08522	12	Z	100	27	0	8.9	12.5	8.8
08594	12	Z	100	4	0	23.4	27.8	15.0
71600	00	Z	100	29	0	9.1	10.3	5.0
71600	12	Z	100	28	0	14.2	17.3	9.9
72201	00	Z	100	28	0	11.4	24.2	21.3
72201	12	Z	100	28	0	13.4	36.7	34.2
72402	00	Z	100	28	0	18.5	19.0	4.4
72402	12	Z	100	28	0	9.5	16.8	13.9
74494	00	Z	100	21	1	5.9	11.9	10.3
74494	12	Z	100	22	0	7.3	7.9	3.0
78016	00	Z	100	29	0	8.1	15.0	12.6
78016	12	Z	100	28	0	11.5	29.1	26.8

TABLE 11

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)
MONITORING CENTRE: EXETER
MONTH: Sep 2004

Monitoring procedures:

Period		:One calendar month.
Data monitored		:Reports from selected radiosonde TEMPs.
Area monitored		:0°N - 90°N, 100°W - 40°E
Standard of comparison		:Background field from UKMO global model.
Position		:Average latitude and longitude for period.
Observation times		:00, 12 UTC.
Level monitored		:500 hPa.
Element monitored		:GEOPOTENTIAL HEIGHT in metres
Parameters monitored	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown during period.
	:SD	:SD of difference of observations from background values at level shown excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values at level shown excluding those with gross errors.
GROSS ERROR LIMITS	:Defined in Appendix I.1	

WMO IDENT	OBS TIME	ELM	LEV	NUM OBS	NUM GROSS	SD	RMS	BIAS
DBBH	00	Z	500	19	0	6.4	6.5	-1.2
DBBH	12	Z	500	18	0	6.1	8.6	6.0
DBLK	12	Z	500	26	0	10.6	13.4	8.2
EBUQ	12	Z	500	18	0	9.5	10.5	-4.4
ELML7	00	Z	500	9	0	11.4	11.4	-1.2
ELML7	12	Z	500	7	0	2.2	3.5	-2.7
FQFL	00	Z	500	8	0	19.9	19.9	1.9
FQFL	12	Z	500	9	0	22.3	22.5	-2.4
FQFM	00	Z	500	6	0	10.9	11.2	-2.7
FQFM	12	Z	500	8	0	13.4	14.5	5.5
KHRH	00	Z	500	8	0	7.1	21.6	20.4
KHRH	12	Z	500	9	0	27.9	30.9	13.3
KRPD	00	Z	500	6	0	16.6	29.5	24.3
KRPD	12	Z	500	4	0	2.5	4.9	-4.3
LDWR	00	Z	500	24	0	6.6	6.6	-0.5
LDWR	12	Z	500	21	0	8.6	9.5	-4.0
OXVH2	00	Z	500	3	0	7.8	14.3	12.0
OXVH2	12	Z	500	3	0	5.4	6.1	3.0
OXYH2	00	Z	500	6	0	11.5	20.0	16.3
OXYH2	12	Z	500	6	0	10.3	14.4	10.0
V2XM	00	Z	500	6	0	14.2	32.6	29.3
V2XM	12	Z	500	5	0	9.0	26.0	24.4
WAAH	00	Z	500	1	0	0.0	19.0	-19.0
WAAH	12	Z	500	4	0	4.3	8.9	7.8
WPKD	00	Z	500	8	0	6.2	6.2	-0.3
WPKD	12	Z	500	11	0	6.6	7.1	2.5
ZCBP6	00	Z	500	10	0	11.6	26.5	23.8
ZCBP6	12	Z	500	9	0	26.4	30.4	15.2
03953	00	Z	500	29	0	17.8	17.9	-1.9
03953	12	Z	500	28	0	20.9	21.3	4.3
04018	00	Z	500	29	0	8.2	13.4	10.6
04018	12	Z	500	28	0	10.9	14.9	10.1
04220	00	Z	500	27	0	29.1	29.4	3.7
04220	12	Z	500	25	0	8.3	16.0	13.7
04270	00	Z	500	27	0	11.7	19.3	15.4
04270	12	Z	500	27	0	8.5	17.0	14.8
04339	00	Z	500	27	0	6.2	13.5	12.0
04339	12	Z	500	24	1	7.9	13.1	10.4
04360	00	Z	500	27	0	6.7	12.5	10.6
04360	12	Z	500	25	0	8.6	13.9	11.0
08001	00	Z	500	24	1	14.7	15.7	-5.6
08001	12	Z	500	26	0	11.3	11.7	-3.2
08508	00	Z	500	28	0	7.1	8.0	-3.5
08508	12	Z	500	28	0	6.8	6.8	0.1
08522	12	Z	500	27	0	5.2	6.4	-3.7
08594	12	Z	500	5	0	9.0	9.2	-1.8
71600	00	Z	500	29	0	6.2	7.2	-3.7
71600	12	Z	500	28	0	8.7	9.4	-3.5
72201	00	Z	500	29	0	8.3	8.7	-2.7
72201	12	Z	500	28	0	4.9	5.0	-1.1
72402	00	Z	500	29	0	12.8	12.8	0.3
72402	12	Z	500	28	0	6.1	6.5	2.0
74494	00	Z	500	25	1	6.3	6.4	1.1
74494	12	Z	500	26	0	7.0	7.0	0.4
78016	00	Z	500	29	0	7.8	8.2	2.8
78016	12	Z	500	28	0	8.1	10.2	6.3

TABLE 12

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)
MONITORING CENTRE: EXETER
MONTH: Sep 2004

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from selected radiosonde TEMPs.
Area monitored		:0°N - 90°N, 100°W - 40°E
Standard of comparison		:Background field from UKMO global model.
Position		:Average latitude and longitude for period.
Observation times		:00, 12 UTC.
Level monitored		:100 hPa.
Element monitored		:VECTOR WIND in m s^{-1}
Parameters monitored	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown during period.
	:UBIAS,VBIAS	:Mean difference of observations of U and V components from background values at level shown excluding those with gross errors.
	:RMS	:Root Mean Square difference of observations from background values at level shown excluding those with gross errors.

GROSS ERROR LIMITS :Defined in Appendix I.2

WMO IDENT	OBS TIME	ELM	LEV	NUM OBS	NUM GROSS	% REJ	RMS	UBIAS	VBIAS
DBBH	00	V	100	18	0	5	7.3	0.3	0.9
DBBH	12	V	100	16	0	0	6.3	0.8	0.0
DBLK	12	V	100	25	0	0	4.7	0.8	1.9
ELML7	00	V	100	7	0	100	12.9	2.4	3.6
ELML7	12	V	100	7	0	100	11.3	-1.0	0.5
FQFL	00	V	100	5	0	60	2.9	0.2	2.0
FQFL	12	V	100	8	0	75	4.9	2.0	-0.1
FQFM	00	V	100	6	0	0	4.5	1.4	1.1
FQFM	12	V	100	8	0	0	4.7	0.0	-0.1
KHRH	00	V	100	6	0	100	10.2	-4.4	-0.8
KHRH	12	V	100	6	0	100	10.2	-1.3	1.5
KRPD	00	V	100	3	0	0	9.2	-7.6	3.3
KRPD	12	V	100	2	0	0	9.6	0.7	0.4
LDWR	00	V	100	23	0	0	2.6	0.0	-0.5
LDWR	12	V	100	20	0	0	2.1	0.4	0.1
OXVH2	00	V	100	2	0	0	1.6	1.4	-0.4
OXVH2	12	V	100	3	0	0	5.4	-3.1	1.5
OXYH2	00	V	100	4	0	100	10.5	0.8	-9.5
OXYH2	12	V	100	2	0	50	4.3	0.7	1.4
V2XM	00	V	100	5	0	100	3.3	0.6	-1.3
V2XM	12	V	100	2	0	100	3.1	1.7	0.7
WAAH	00	V	100	1	0	100	15.0	12.5	8.2
WAAH	12	V	100	3	0	100	15.8	15.0	1.7
WPKD	00	V	100	8	0	87	8.4	-0.4	3.1
WPKD	12	V	100	10	0	90	6.7	0.3	-1.2
ZCBP6	00	V	100	4	0	0	5.2	2.0	3.0
ZCBP6	12	V	100	6	0	0	3.7	0.5	-1.2
03953	00	V	100	29	0	0	3.2	0.3	0.6
03953	12	V	100	26	0	0	3.3	0.1	0.7
04018	00	V	100	29	0	0	3.2	0.3	-0.2
04018	12	V	100	28	0	0	2.6	-0.2	0.2
04220	00	V	100	26	0	0	2.7	-0.4	0.0
04220	12	V	100	25	0	0	2.9	-0.2	0.6
04270	00	V	100	26	0	0	3.5	-0.6	0.7
04270	12	V	100	27	0	0	3.0	0.2	1.1
04339	00	V	100	22	0	0	5.7	0.0	0.7
04339	12	V	100	22	0	0	5.8	0.3	1.0
04360	00	V	100	27	0	0	2.8	-0.4	0.0
04360	12	V	100	24	0	0	2.1	-0.1	0.3
08001	00	V	100	24	0	0	4.2	0.5	0.7
08001	12	V	100	15	0	0	4.3	0.1	0.4
08508	00	V	100	16	0	0	3.1	-0.6	-0.1
08508	12	V	100	14	0	0	3.8	-0.6	0.5
08522	12	V	100	27	0	0	3.7	1.2	0.5
08594	12	V	100	4	0	100	4.3	-0.7	1.1
71600	00	V	100	28	0	0	3.3	-0.3	-0.2
71600	12	V	100	28	0	0	2.9	0.5	0.5
72201	00	V	100	27	0	0	3.4	0.5	-0.3
72201	12	V	100	28	0	0	3.0	0.4	0.2
72402	00	V	100	28	0	0	4.4	-0.6	-0.8
72402	12	V	100	28	0	0	3.7	0.0	0.2
74494	00	V	100	22	0	100	2.2	-0.3	-0.1
74494	12	V	100	22	0	100	2.5	0.1	0.7
78016	00	V	100	29	0	0	5.0	0.3	-0.4
78016	12	V	100	28	0	0	3.8	0.2	1.1

TABLE 13

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)
MONITORING CENTRE: EXETER
MONTH: Sep 2004

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from selected radiosonde TEMPs.
Area monitored		:0°N - 90°N, 100°W - 40°E
Standard of comparison		:Background field from UKMO global model.
Position		:Average latitude and longitude for period.
Observation times		:00, 12 UTC.
Level monitored		:500 hPa.
Element monitored		:VECTOR WIND in $m\ s^{-1}$
Parameters monitored	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown during period.
	:UBIAS,VBIAS:	Mean difference of observations of U and V components from background values at level shown excluding those with gross errors.
	:RMS	:Root Mean Square difference of observations from background values at level shown excluding those with gross errors.
GROSS ERROR LIMITS	:Defined in Appendix I.2	

WMO IDENT	OBS TIME	ELM	LEV	NUM OBS	NUM GROSS	% REJ	RMS	UBIAS	VBIAS
DBBH	00	V	500	19	0	5	9.4	-0.7	-0.1
DBBH	12	V	500	18	0	0	5.5	0.4	-1.6
DBLK	12	V	500	25	0	0	5.4	0.0	0.8
ELML7	00	V	500	6	0	100	10.7	3.3	3.1
ELML7	12	V	500	7	0	100	10.0	-1.2	1.4
FQFL	00	V	500	9	0	66	3.2	0.4	-1.5
FQFL	12	V	500	9	0	77	3.5	0.6	-1.0
FQFM	00	V	500	6	0	0	5.6	2.4	0.2
FQFM	12	V	500	8	0	0	4.3	-0.1	-0.8
KHRH	00	V	500	6	0	100	9.3	-2.3	-2.9
KHRH	12	V	500	9	0	100	9.8	1.4	-0.3
KRPD	00	V	500	2	0	0	7.0	-5.8	3.8
KRPD	12	V	500	3	0	0	10.0	2.0	5.1
LDWR	00	V	500	24	0	0	4.1	0.4	-0.4
LDWR	12	V	500	21	0	0	3.5	-0.6	0.6
OXVH2	00	V	500	3	0	0	6.1	-3.5	-2.1
OXVH2	12	V	500	3	0	0	8.4	-5.5	-0.8
OXYH2	00	V	500	5	0	80	18.2	0.4	-11.8
OXYH2	12	V	500	5	0	40	16.9	-1.3	6.1
V2XM	00	V	500	6	0	0	3.1	0.1	-1.1
V2XM	12	V	500	4	0	0	5.8	-3.2	3.5
WAAH	00	V	500	1	0	100	8.4	7.6	3.6
WAAH	12	V	500	3	0	100	12.1	11.2	4.1
WPKD	00	V	500	8	0	87	6.4	0.0	1.2
WPKD	12	V	500	11	0	90	7.3	0.3	0.3
ZCBP6	00	V	500	6	0	0	3.9	-0.8	0.8
ZCBP6	12	V	500	8	0	0	4.1	0.3	1.2
03953	00	V	500	29	0	0	4.2	0.0	0.8
03953	12	V	500	28	0	0	3.8	0.1	-0.4
04018	00	V	500	29	0	0	4.1	-0.4	-0.6
04018	12	V	500	28	0	0	3.7	-0.3	-0.6
04220	00	V	500	27	0	3	5.4	-1.1	1.0
04220	12	V	500	25	0	0	3.2	-1.0	0.5
04270	00	V	500	27	0	0	4.3	-0.6	0.7
04270	12	V	500	27	0	0	4.6	-0.8	0.0
04339	00	V	500	26	0	3	7.2	-1.4	0.5
04339	12	V	500	25	0	0	4.0	-0.2	-1.3
04360	00	V	500	27	0	0	4.3	-0.1	-0.7
04360	12	V	500	25	0	0	4.2	-0.5	0.9
08001	00	V	500	25	0	0	3.6	-0.4	-0.4
08001	12	V	500	19	0	0	4.3	1.3	0.5
08508	00	V	500	16	0	0	3.5	0.1	1.1
08508	12	V	500	14	0	0	2.8	0.2	0.5
08522	12	V	500	27	0	0	3.5	0.3	-0.5
08594	12	V	500	4	0	100	6.0	-1.5	-4.7
71600	00	V	500	28	0	0	2.9	-0.4	0.1
71600	12	V	500	28	0	0	3.3	0.4	0.1
72201	00	V	500	29	0	0	2.9	0.1	0.4
72201	12	V	500	28	0	0	3.0	-0.2	-0.5
72402	00	V	500	29	0	0	2.8	-0.1	-0.7
72402	12	V	500	28	0	0	3.1	0.4	-0.2
74494	00	V	500	24	0	0	2.8	0.1	-0.4
74494	12	V	500	26	0	0	2.3	0.1	0.1
78016	00	V	500	29	0	0	5.4	-0.7	-0.4
78016	12	V	500	28	0	0	4.1	0.9	-1.5

APPENDIX I

1. The gross error limits for observation minus background differences of geopotential height in Tables 5, 10 and 11 are:-

Level (hPa)	Geopotential height (metres)
1000	100
850	100
700	100
500	150
400	175
300	200
250	225
200	250
150	275
100	300
70	375
50	400
30	450

The weighted RMS values used in Table 5,10 and 11 are calculated using the following weights:-

Level (hPa)	Weight
1000	3.70
850	3.40
700	2.90
500	2.20
400	1.90
300	1.60
250	1.50
200	1.37
150	1.19
100	1.00
70	0.87
50	0.80
30	0.64

2. The gross error limits for observation minus background differences of windspeed in Tables 6,12 and 13 are:-

Level (hPa)	Windspeed m s^{-1}
1000	35
850	35
700	40
500	45
400	50
300	60
250	60
200	50
150	50
100	45